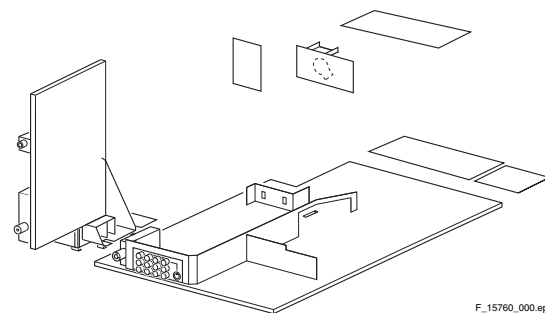


Service
Service
ServiceF_15760_000.eps
171105

Service Manual

Contents	Page
1. Technical Specifications, Connections, and Chassis Overview	2
2. Safety and Maintenance Instructions, Warnings, and Notes	4
3. Directions for Use	5
4. Mechanical Instructions	6
5. Service Modes, Error Codes, and Fault Finding	8
6. <i>Block Diagrams, Testpoint Overviews, and Waveforms</i>	
Wiring Diagram	17
Block Diagram Supply and Deflection	18
Testpoint Overview Mono Carrier	19
Block Diagram Video	20
Testpoint Overview CRT Panel	21
Block Diagram Audio/Control	22
ATSC Block Diagram	23
I2C and Supply Voltage Overview	24
7. <i>Circuit Diagrams and PWB Layouts</i>	
Mono Carrier: Power Supply	(A1) 25
Mono Carrier: Diversity Table for [A1]	26
Mono Carrier: Deflection	(A2) 27
Mono Carrier: Diversity Table for [A2]	28
Mono Carrier: Tuner IF	(A3) 29
Mono Carrier: Hercules	(A4) 30
Mono Carrier: Features & Connectivity	(A5) 31
Mono Carrier: Class D - Audio Amplifier	(A6) 32
Mono Carrier: Audio Amplifier	(A7) 33
Mono Carrier: Rear I/O Cinch	(A8) 34
Mono Carrier: Front Control	(A9) 35
Mono Carrier: DVD PSU (optional)	(A10) 36
CRT Panel	(B1) 43
CRT Panel: Eco Scavem	(B2) 44
Side AV + Headphone Panel	(D) 46
Top Control Panel	(E) 48

Contents	Page
Front Interface Panel (For PV02 Styling)	(J) 49
Main Switch Panel (For SL5 Styling)	(M) 50
8. Alignments	53
9. Circuit Descriptions, List of Abbreviations, and IC Data Sheets	59
Abbreviation List	62
IC Data Sheets	63
10. Spare Parts List	64
11. Revision List	69

©Copyright 2005 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connections
- 1.3 Chassis Overview

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	: CRT, DV, RF
Screen size	: 27", 4:3
	: 32", 4:3
Tuning system	: PLL
TV Color systems	: ATSC (QAM, 8VSB)
	: NTSC
IF picture carrier	: 45.75 MHz
Video playback	: NTSC

1.1.2 Sound

Sound systems	: BTSC
Maximum power (V_{RMS})	: 2 x 5

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V_{AC})	: 90 - 140
- Mains frequency (Hz)	: 60
Ambient conditions:	
- Temperature range ($^{\circ}C$)	: +5 to +40
- Maximum humidity	: 90% R.H.

Power consumption (values are indicative)	
- Normal operation (W)	: $\approx$ 120
- Stand-by (W)	: < 1

1.1.4 Mechanical Styling

Model Number	Styling Name
27PT9015D/37	SL5
27MT5005D/37	PV02
27MT6005D/37	SL3
32PT7005D/37	SL3
32PT9005D/37	PV02

In above table the link is shown between the model number and the (internal) Philips styling number. In this manual, sometimes a reference is made to this styling number. For a mechanical drawing of the model, please check the quarterly published Product Survey.

1.2 Connections

Note: The following connector color abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, Ye= Yellow.

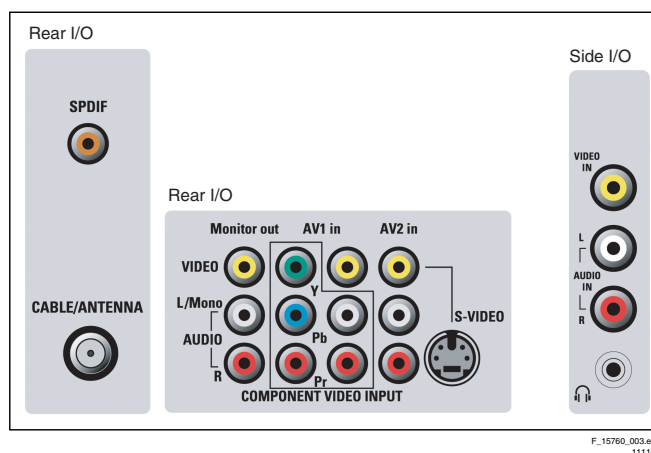


Figure 1-1 Connections overview

1.2.1 Rear Connections

Cinch: S/PDIF - Out

Bk - Coaxial	0.4 - 0.6V _{PP} / 75 ohm
--------------	-----------------------------------



Cable/Antenna - In

- F-type (US)	Coax, 75 ohm
---------------	--------------



Monitor Out - Cinch: Video CVBS - Out, Audio - Out

Ye - Video CVBS	1 V _{PP} / 75 ohm
Wh - Audio L	0.5 V _{RMS} / 10 kohm
Rd - Audio R	0.5 V _{RMS} / 10 kohm



AV1 - Cinch: Video YPbPr - In

Gn - Video Y	1 V _{PP} / 75 ohm
Bu - Video Pb	0.7 V _{PP} / 75 ohm
Rd - Video Pr	0.7 V _{PP} / 75 ohm



AV1 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm
Wh - Audio L	0.5 V _{RMS} / 10 kohm
Rd - Audio R	0.5 V _{RMS} / 10 kohm



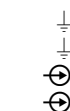
AV2 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm
Wh - Audio L	0.5 V _{RMS} / 10 kohm
Rd - Audio R	0.5 V _{RMS} / 10 kohm



AV2 - SVHS (Hosiden): Video Y/C - In

1 - Ground Y	Gnd
2 - Ground C	Gnd
3 - Video Y	1 V _{PP} / 75 ohm
4 - Video C	0.3 V _{PP} / 75 ohm



1.2.2 Side Connections

Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm
Wh - Audio L	0.5 V _{RMS} / 10 kohm
Rd - Audio R	0.5 V _{RMS} / 10 kohm
Bk - Head phone	32 - 600 ohm / 10 mW



1.3 Chassis Overview

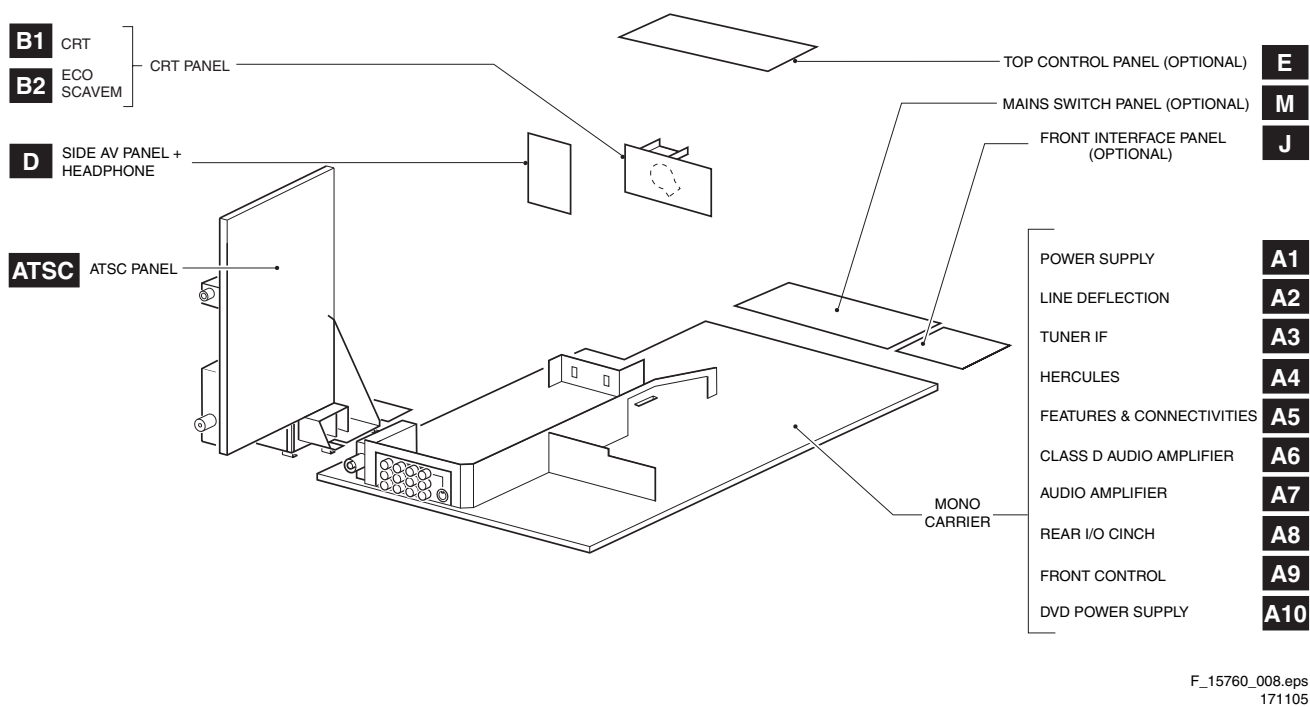


Figure 1-2 PWB location

2. Safety and Maintenance Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Maintenance Instructions
- 2.3 Warnings
- 2.4 Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Due to the chassis concept, a very large part of the circuitry (incl. deflection) is 'hot'. Therefore, connect the set to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, you must return the set in its original condition. Pay, in particular, attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current is flowing. In particular this is valid for the:
 1. Pins of the line output transformer (LOT).
 2. Fly-back capacitor(s).
 3. S-correction capacitor(s).
 4. Line output transistor.
 5. Pins of the connector with wires to the deflection coil.
 6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the mains cord for external damage.
- Check the strain relief of the mains cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Turn on the main power switch (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch the TV 'off' and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:

1. Perform the 'general repair instruction' noted above.
2. Clean the power supply and deflection circuitry on the chassis.
3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_{dc}). Discharge until the meter reading is 0 V (after approx. 30 s).

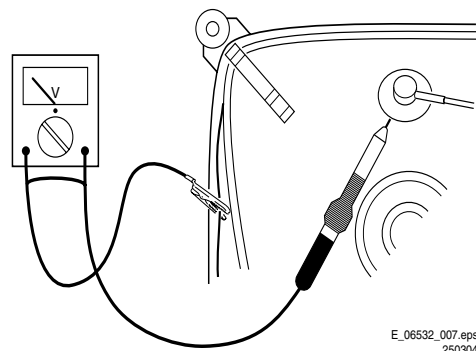


Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, ▲). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and ground cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. We do not recommend adjusting this unit during repair.
- Be careful during measurements in the high voltage section and on the picture tube.
- Never replace modules or other components while the unit is 'on'.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground ($\perp$), or hot ground ($\perp$), depending on the tested area of circuitry.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a color bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with (⏏) and without (⏏) aerial signal. Measure the voltages in the power supply section both in normal operation (ⓐ) and in standby (ⓑ). These values are indicated by means of the appropriate symbols.
- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2.4.2 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are expressed in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Lead-free Solder

Philips CE is producing lead-free sets (PBF) from 1.1.2005 onwards.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 5 and 6 refer to the production year, digits 7 and 8 refer to production week (in example below it is 1991 week 18).



E_06532_024.eps
230205

Figure 2-2 Serial number example

Regardless of the special lead-free logo (which is not always indicated), one must treat all sets from this date onwards according to the rules as described below.

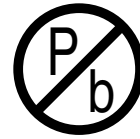


Figure 2-3 Lead-free logo

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
 - To reach a solder-tip temperature of at least 400°C.
 - To stabilise the adjusted temperature at the solder-tip.
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilised at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch "off" unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to **avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:

- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid mix of two alloys).

2.4.4 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:

<http://www.philips.com/support>

<http://www.p4c.philips.com>

4. Mechanical Instructions

Index of this chapter:

- 4.1 Set Disassembly
- 4.2 Service Position
- 4.3 Assy/Panel Removal
- 4.4 Set Re-assembly

Notes:

- Figures below can deviate slightly from the actual situation, due to different set executions.

4.1 Set Disassembly

Warning: Be sure to disconnect the AC power from the set before opening it.

4.1.1 Rear Cover

1. Remove all fixation screws of the rear cover (do not forget the screws that hold the rear connection panel).
2. Pull the rear cover backwards to remove it.

4.2 Service Position

Before placing the Mono Carrier in its service position, remove the Front Interface Assy/panel (see paragraph "Front Interface Assy/Panel removal") and the Side AV Assy/panel (see paragraph "Side AV Assy/Panel removal").

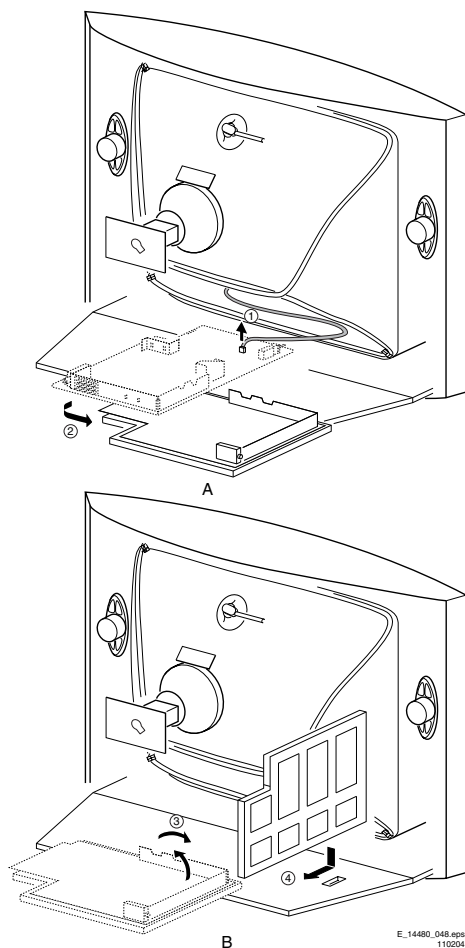


Figure 4-1 Service position Mono Carrier

1. Disconnect the degaussing coil [1].

2. Release the two fixation clamps (at the mid left and mid right side of the bracket), and remove the bracket from the bottom tray, by pulling it backwards [2].
3. Turn the chassis tray 90 degrees counter clockwise.
4. Move the panel bracket somewhat to the left and flip it 90 degrees [3], with the components towards the CRT.
5. Turn the panel bracket with the rear I/O toward the CRT.
6. Place the hook of the tray in the fixation hole of the cabinet bottom [4] and secure it.

4.3 Assy/Panel Removal

4.3.1 Front Interface Assy/Panel Removal

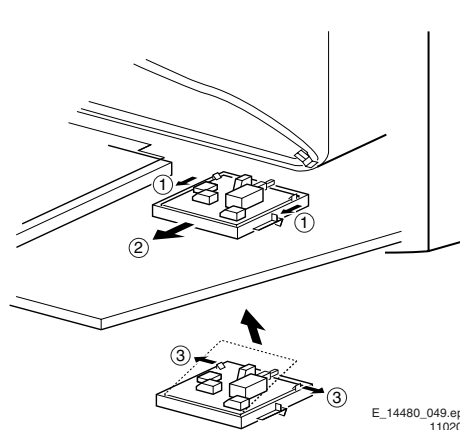


Figure 4-2 Front interface Assy/panel removal

1. Remove the complete module from the bottom plate, by pulling the two fixation clamps upward [1], while sliding the module away from the CRT [2].
Note: these clamps are difficult to access.
2. Release the two fixation clamps [3] at the side of the bracket, and lift the panel out of the bracket (it hinges at one side).

4.3.2 Side AV Assy/Panel Removal

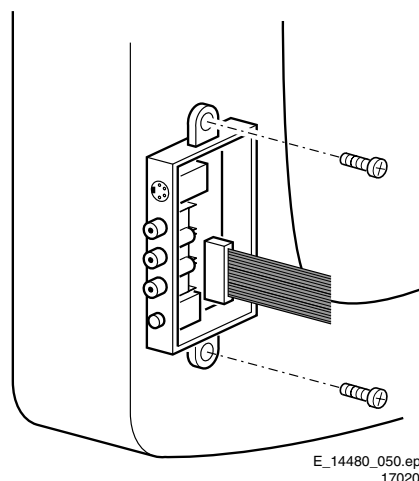
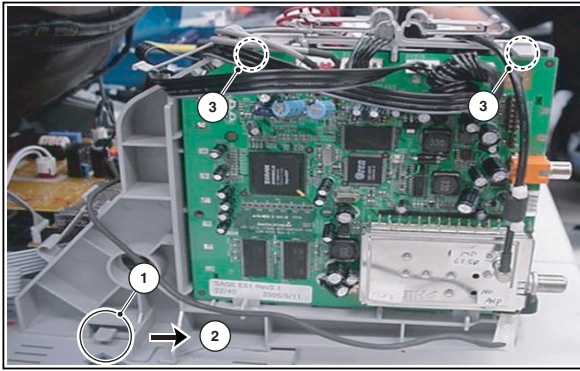


Figure 4-3 Side AV Assy/panel removal

1. Remove the two fixation screws, and remove the complete Side AV assembly.
2. Release the two fixation clamps, and lift the panel out of the bracket.

4.3.3 ATSC Module/Panel Removal



F_15760_009.eps
151105

Figure 4-4 ATSC bracket

1. Disconnect all cables that lead to the module.
2. Unlock the clip [1] at the left side of the bracket and pull out the ATSC module [2].
3. Release the fixation clips that hold the panel [3] and take out the panel (it hinges at the bottom).

4.4 Set Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Note: before you mount the rear cover, perform the following checks:

- Check whether the AC power cord is mounted correctly in its guiding brackets.
- Check whether all cables are replaced in their original position

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Test Points
- 5.2 Service Modes
- 5.3 ComPair
- 5.4 Error Codes
- 5.5 The Blinking LED Procedure
- 5.6 Protections
- 5.7 Fault Finding and Repair Tips

5.1 Test Points

This chassis is equipped with test points in the service printing. In the schematics test points are identified with a rectangle box around Fxxx or lxxx. These test points are specifically mentioned in the "Test Point Overview" as "half moons" with a dot in the center.

Perform measurements under the following conditions:

- Television set in Service Default Alignment Mode.
- Video input: Color bar signal.
- Audio input: 3 kHz left channel, 1 kHz right channel.

5.2 Service Modes

Service Default mode (SDM) and Service Alignment Mode (SAM) offers several features for the service technician, while the Customer Service Mode (CSM) is used for communication between the call center and the customer.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version readout for all chassis.

Minimum requirements for ComPair: a Pentium processor, a Windows OS, and a CD-ROM drive (see also paragraph "ComPair").

5.2.1 Service Default Mode (SDM)

Purpose

- To create a predefined setting for measurements to be made.
- To override software protections.
- To start the blinking LED procedure.

Specifications

Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP-PAL/Multi	475.25	PAL B/G
NAFTA, AP-NTSC, LATAM	61.25 (ch. 3)	NTSC M

- Tuning frequency 61.25 MHz for NTSC: The TV shall tune to physical channel 3 only if channel 3 is an analog channel or if there is no channel 3 installed in the channel map. If there is a digital channel installed in channel 3, then the frequency to which the set will tune, would be as specified in the channel map and could be different from the one corresponding to the physical channel 3.
- All picture settings at 50% (brightness, color, contrast).
- All sound settings at 50%, except volume at 25%.
- All service-unfriendly modes (if present) are disabled, like:
 - (Sleep) timer.
 - Child/parental lock.
 - Picture mute (blue mute or black mute).
 - Automatic volume levelling (AVL).

- Auto switch "off" (when no video signal was received for 10 minutes).
- Skip/blank of non-favorite pre-sets.
- Smart modes.
- Auto store of personal presets.
- Auto user menu time-out.

How to Enter

To enter SDM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the MENU button (do not allow the display to time out between entries while keying the sequence).
- Short jumper wires 9252 and 9275 on the family board (see Fig. 8-1) and apply AC power. Then press the power button (remove the short after start-up).
Caution: Entering SDM by shorting wires 9252 and 9275 will override the +8V-protection. Do this only for a short period. When doing this, the service-technician must know exactly what he is doing, as it could damage the television set.
- Or via ComPair.

After entering SDM, the following screen is visible, with SDM in the upper right corner of the screen to indicate that the television is in Service Default Mode.

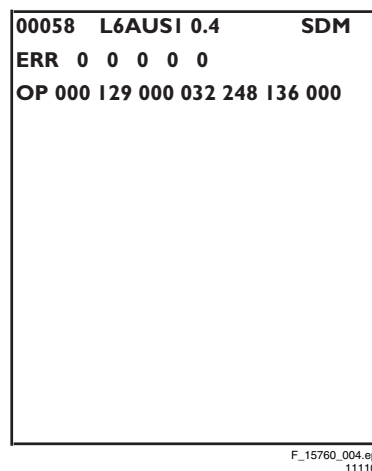


Figure 5-1 SDM menu

How to Navigate

Use one of the following methods:

- When you press the MENU button on the remote control, the set will switch on the normal user menu in the SDM mode.
- On the TV, press and hold the VOLUME DOWN and press the CHANNEL DOWN for a few seconds, to switch from SDM to SAM and reverse.

How to Exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter or the television set.

If you turn the television set off by removing the AC power (i.e., unplugging the television) without using the POWER button, the television set will remain in SDM when AC power is re-applied, and the error buffer is not cleared.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To change option settings.
- To display / clear the error code buffer.
- To perform alignments.

Specifications

- Operation hours counter (maximum five digits displayed).
- Software version, Error codes, and Option settings display.
- Error buffer clearing.
- Option settings.
- AKB switching.
- Software alignments (Tuner, White Tone, Geometry & Audio).
- NVM Editor.
- ComPair Mode switching.

How to Enter

To enter SAM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the OSD/STATUS button (do not allow the display to time out between entries while keying the sequence).
- Or via ComPair.

After entering SAM, the following screen is visible, with SAM in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

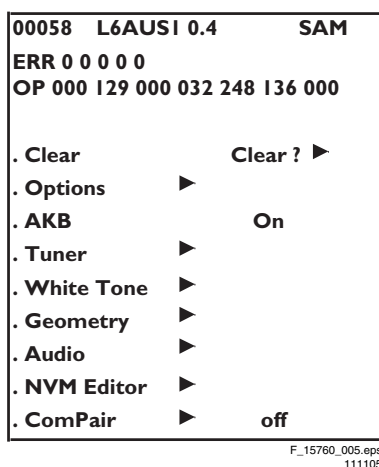


Figure 5-2 SAM menu

Menu explanation

1. **LLLLL**. This represents the run timer. The run timer counts normal operation hours, but does not count standby hours.
2. **AAABCD-X.Y**. This is the software identification of the main microprocessor:
 - **A**= the project name (L4.6 ATSC= L6A).
 - **B**= the region: E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM.
 - **C**= the software diversity:
 - **Europe:** T= 1 page TXT, F= Full TXT, V= Voice control.
 - **LATAM and NAFTA:** N= Stereo non-dBx, S= Stereo dBx.
 - **Asian Pacific:** T= TXT, N= non-TXT, C= NTSC.
 - **ALL regions:** M= mono, D= DVD, Q= Mk2.
 - **D**= the language cluster number.
 - **X**= the main software version number (updated with a major change that is incompatible with previous versions).
 - **Y**= the sub software version number (updated with a minor change that is compatible with previous versions).
3. **SAM**. Indication of the Service Alignment Mode.
4. **Error Buffer**. Shows all errors detected since the last time the buffer was erased. Five errors possible.
5. **Option Bytes**. Used to set the option bytes. See "Options" in the Alignments section for a detailed description. Seven codes are possible.
6. **Clear**. Erases the contents of the error buffer. Select the CLEAR menu item and press the MENU RIGHT key. The content of the error buffer is cleared.

7. **Options**. Used to set the option bits. See "Options" in the Alignments section for a detailed description.
8. **AKB**. Used to disable (Off) or enable (On) the "black current loop" (AKB= Auto Kine Bias).
9. **Tuner**. Used to align the tuner. See "Tuner" in the Alignments section for a detailed description.
10. **White Tone**. Used to align the white tone. See "White Tone" in the Alignments section for a detailed description.
11. **Geometry**. Used to align the geometry settings of the television. See "Geometry" in the Alignments section for a detailed description.
12. **Audio**. No audio alignment is necessary for this television set.
13. **NVM Editor**. Can be used to change the NVM data in the television set. See table "NVM data" further on.
14. **ComPair**. Can be used to switch on the television to In System Programming (ISP) mode, for software uploading via ComPair.

Caution: When this mode is selected without ComPair connected, the TV will be blocked. Remove the AC power to reset the TV.

How to Navigate

- In SAM, select menu items with the MENU UP/DOWN keys on the remote control transmitter. The selected item will be highlighted. When not all menu items fit on the screen, use the MENU UP/DOWN keys to display the next / previous menu items.
- With the MENU LEFT/RIGHT keys, it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
 - Activate the selected submenu.
- In SAM, when you press the MENU button twice, the set will switch to the normal user menus (with the SAM mode still active in the background). To return to the SAM menu press the MENU or STATUS/EXIT button.
- When you press the MENU key in while in a submenu, you will return to the previous menu.

How to Store SAM Settings

To store the settings changed in SAM mode, leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set.

How to Exit

Switch the set to STANDBY by pressing the POWER button on the remote control transmitter or the television set. If you turn the television set "off" by removing the AC power (i.e., unplugging the television) without using the POWER button, the television set will remain in SAM when AC power is re-applied, and the error buffer is not cleared.

5.2.3 Customer Service Mode (CSM)**Purpose**

The Customer Service Mode shows error codes and information on the TV's operation settings. The call center can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call center to diagnose problems and failures in the TV set before making a service call. The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to Enter

To enter CSM, press the following key sequence on the remote control transmitter: "123654" (do not allow the display to time out between entries while keying the sequence).

Upon entering the Customer Service Mode, the following screen will appear:

```

1 00058 L6AUSI 0.4 CSM
2 CODES 0 0 0 0 0
3 OP 000 129 000 032 248 136 000
4
5 P3C-I
6
7 NTSC
8 Stereo
9 CO 50 CL 50 BR 50 HU 0
0 AVL Off BS 50

```

F_15760_006.eps
181105

Figure 5-3 CSM menu

Menu Explanation

1. Indication of the decimal value of the operation hours counter, Software identification of the main microprocessor (see "Service Default or Alignment Mode" for an explanation), and the service mode (CSM= Customer Service Mode).
2. Displays the last five errors detected in the error code buffer.
3. Displays the option bytes.
4. Displays the type number version of the set.
5. Reserved item for P3C call centers (AKBS stands for Advanced Knowledge Base System).
6. Indicates the television is receiving an "IDENT" signal on the selected source. If no "IDENT" signal is detected, the display will read "NOT TUNED"
7. Displays the detected Color system (e.g. PAL/NTSC).
8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to Exit

To exit CSM, use one of the following methods:

- Press the MENU, STATUS/EXIT, or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.2.4 Digital Customer Service Mode (DCSM)**Purpose**

The Digital Customer Service Mode shows error codes and information on the TV's operation settings in **"digital" mode**. The call center can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call center to diagnose problems and failures in the TV set before making a service call.

The DCSM is a read-only mode; therefore, modifications are not possible in this mode.

How to enter

To enter DCSM, press the following key sequence (**with the TV in "digital" mode**) on the remote control transmitter: "123654" (do not allow the display to time out between entries while keying the sequence).

Upon entering the Digital Customer Service Mode, the following screen will appear:

```

1 HRM SW Ver: 01.03a CSM
2 CODES of HRM
3 OP 000 129 000 032 248 136 000
4
5 P3C-I
6
7 ATSC
8 Stereo
9 CO 50 CL 50 BR 50 HU 0
0 AVL Off BS 50

```

F_15760_002.eps
101105

Figure 5-4 DCSM menu

Menu Explanation

1. Indication of the digital software version.
2. Displays the error codes related to the ATSC module.
3. Displays the option bytes.
4. Displays the type number version of the set.
5. Reserved item for P3C call centers (AKBS stands for Advanced Knowledge Base System).
6. Indicates the television is receiving an "IDENT" signal on the selected source. If no "IDENT" signal is detected, the display will read "NOT TUNED"
7. Displays the detected Color system (e.g. PAL/NTSC).
8. Displays the detected Audio (e.g. stereo/mono).
9. Displays the picture setting information.
10. Displays the sound setting information.

How to Exit

To exit DCSM, use one of the following methods:

- Press the MENU, STATUS/EXIT, or POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5.3 ComPair**5.3.1 Introduction**

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the Force/SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.3.2 Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial (or RS-232) cable.

For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- Automatically (by communicating with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I²C/UART level. ComPair can access the I²C/UART bus of the television. ComPair can send and receive I²C/UART commands to the microcontroller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I²C/UART buses of the TV-set.
- Manually (by asking questions to you): Automatic diagnosis is only possible if the microcontroller of the television is working correctly and only to a certain extent. When this is not the case, ComPair will guide you through the fault finding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point 17 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the fault finding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

5.3.3 How to Connect

This is described in the chassis fault finding database in ComPair.

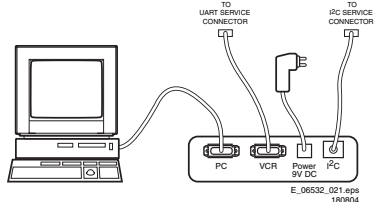


Figure 5-5 ComPair interface connection

5.3.4 How to Order

ComPair order codes (US):

- ComPair Software: ST4191.
- ComPair Interface Box: 4822 727 21631.
- AC Adapter: T405-ND.
- ComPair Quick Start Guide: ST4190.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630.

Note: If you encounter any problems, contact your local support desk.

5.4 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

5.4.1 How To Read The Error Buffer

You can read the error buffer in 3 ways:

- On screen via the SAM (if you have a picture). **Examples:**

- ERROR: 0 0 0 0 0: No errors detected
- ERROR: 6 0 0 0 0: Error code 6 is the last and only detected error
- ERROR: 9 6 0 0 0: Error code 6 was detected first and error code 9 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture). See “The Blinking LED Procedure”.
- Via ComPair.

5.4.2 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

- By using the CLEAR command in the SAM menu:
 - To enter SAM, press the following key sequence on the remote control transmitter: “062596” directly followed by the OSD/STATUS button (do not allow the display to time out between entries while keying the sequence).
 - Make sure the menu item CLEAR is highlighted. Use the MENU UP/DOWN buttons, if necessary.
 - Press the MENU RIGHT button to clear the error buffer. The text on the right side of the “CLEAR” line will change from “CLEAR?” to “CLEARED”
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

Note: If you exit SAM by disconnecting the AC power from the television set, the error buffer is not reset.

5.4.3 Error Codes

In case of non-intermittent faults, write down the errors present in the error buffer and clear the error buffer before you begin the repair. This ensures that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error and not the actual cause of the problem (for example, a fault in the protection detection circuitry can also lead to a protection).

Table 5-2 Error code overview

Error	Device	Error description	Check item	Diagram
0	Not applicable	No Error		
1	Not applicable	X-Ray/Over-voltage protection (US only)	2411, 2412, 2413, 6404, 6411, 6412	A2
2	Not applicable	High beam (BCI) protection	3404, 7405	A2
3	Not applicable	Vertical guard protection	3466, 7451, 7452, 7453, 7454	A2
4	Tuner	I ² C error while communicating with 2nd tuner	1000, 5010, (PIP Module)	F2
5	Not applicable	+5v protection	7604, 7605	A5
6	I ² C bus	General I ² C error	7200, 3207, 3214	A4
7	Not applicable	Power down (over current) protection	-	-
8	Not applicable	EW protection (only for sets with EW circuitry)	-	-
9	24C16	I ² C error while communicating with the EEPROM	7601, 3604, 3605	A5
10	Tuner	I ² C error while communicating with the PLL tuner	1000, 5001	A3
11	TDA6107/A	Black current loop instability protection	7330, 3351, CRT	B1
12	SDA9488X	I ² C error while communicating with the PIP processor	7242 (PIP Module)	F1
13	Not applicable	I ² C error while communicating with the Voice Ctrl processor	-	-
14	DVD Loader	I ² C error while communicating with the DVD Interface module	DVD Interface module	DVD Loader
15	TDA9178T/N1	I ² C error while communicating with the LTI module	7610	H
16	TDA9887	I ² C error while communicating with the PIP Demodulator	7201	F2
17	ATSC module	I ² C error while communicating with the IBO module	-	ATSC
18	ATSC module	I ² C error while communicating with other I ² C IBO module	-	ATSC

Note: For all error codes the following applies: error codes are only valid when the module or device they refer to is used in the TV set.

5.5 The Blinking LED Procedure

Using this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful when there is no picture.

When the SDM is entered, the front LED will blink the contents of the error-buffer:

- When all the error-codes are displayed, the sequence finishes with a LED blink of 1.5 seconds,
- The sequence starts again.

Example of error buffer: **12 9 6 0 0**

After entering SDM, the following occurs:

- 1 long blink of 5 seconds to start the sequence,
- 12 short blinks followed by a pause of 1.5 seconds,
- 9 short blinks followed by a pause of 1.5 seconds,
- 6 short blinks followed by a pause of 1.5 seconds,
- 1 long blink of 1.5 seconds to finish the sequence,
- The sequence starts again at 12 short blinks.

5.6 Protections

If a fault situation is detected, an error code will be generated; and, if necessary, the television set will go into protection mode. Blinking of the red LED at a frequency of 3 Hz indicates the protection mode. In some error cases, the microprocessor does not put the set in protection mode. The error codes of the error buffer and the blinking LED procedure can be read via the Service Default Menu (SDM), or via ComPair.

To get a quick diagnosis the chassis has three service modes implemented:

- The (Digital) Customer Service Mode ((D)CSM).
- The Service Default Mode (SDM).
- The Service Alignment Mode (SAM).

For a detailed mode description, see the relevant sections.

5.7 Fault Finding and Repair Tips

Notes:

- It is assumed that the components are mounted correctly with correct values and no bad solder joints.
- Before any fault finding actions, check if the correct options are set.

5.7.1 NVM Editor

In some cases, it can be handy if one directly can change the NVM contents. This can be done with the "NVM Editor" in SAM mode. In the next table, some default NVM values are given.

Table 5-3 Default NVM values

Bit	Addr. (DEC)	27MT5005D/37	27MT6005D/37	27PT9015D/37	32PT7005D/37	32PT9005D/37
EW (EW width)	19	37	45	45	37	37
PW (EW parabola width)	20	10	20	20	10	10
HS (Horizontal shift)	21	26	43	43	26	26
HP (Horizontal Parallelogram)	22	31	33	33	31	31
HB (Horizontal Bow)	23	31	31	31	31	31
UCP(EW Upper Corner Parab.)	24	30	41	41	30	30
LCP(EW Lower Corner Parab.)	25	40	51	51	40	40
TC (EW Trapezium)	26	26	20	20	26	26
VS (Vertical Slope)	27	37	31	31	37	37
VA (Vertical Amplitude)	28	30	31	31	30	30
SC (S-Correction)	29	35	30	30	25	25
VSH (Vertical Shift)	30	26	33	33	26	26
VX (Vertical Zoom)	31	25	25	25	25	25
VSL (Vertical scroll)	32	32	32	32	32	32
EHTC (Vertical linearity)	33	32	32	32	32	32
BLOR (Black Level Offset Red)	34	36	36	36	36	36
BLOG (Black Level Offset Grn)	35	31	31	31	31	31
AGC (AGC Take over)	36	255	255	255	255	255
OIF (IF-PLL Offset)	37	38	38	38	38	38

Bit	Addr. (DEC)	27MT5005D/37	27MT6005D/37	27PT9015D/37	32PT7005D/37	32PT9005D/37
-Empty-	38	2	2	2	2	2
H60 (60 Hz Horizontal Shift)	39	9	9	9	9	9
PWL (Peak White Limit)	40	10	10	10	10	10
Phase 1 time constant, Video Coring, Ratio & White Stretch	41	15	15	15	15	15
60 Hz Vertical amplitude	42	48	48	48	48	48
YD & CL	43	87	88	88	89	89
RGB amplitude full TXT mode	46	8	8	8	8	8
NVM Table Version	60	18	18	18	18	18
Option Table Version	61	18	18	18	18	18
NVM_CVI_BLOR	62	25	25	25	25	25
NVM_CVI_BLOG	63	3	3	3	3	3
TXT Brightness	64	40	40	40	40	40
V60 offset (60Hz Vert. Ampl.)	66	254	254	254	254	254
FOAB, CHSE	139	3	3	3	3	3
SPR, WS	140	0	0	0	0	0
VMA, SVM	141	50	52	52	50	50
NVM_SOC_SMD	142	3	3	3	3	3
NVM_CCC_Preset_Gain_Red	143	31	31	31	31	31
NVM_CCC_Preset_Gain_Grn	144	31	31	31	31	31
NVM_CCC_Preset_Gain_Blue	145	31	31	31	31	31
NVM_FMWS	149	3	3	3	3	3
NVM_ASD_SC1_THR	150	16	16	16	16	16
NVM_CRYSTALALIGN	208	63	63	63	63	63
Last Brightness(VID PP others)	264	50	50	50	50	50
Last Color (VID PP others)	265	40	40	40	40	40
Last Contrast (VID PP others)	266	85	85	85	85	85
Last Sharpness(VID PP others)	267	60	60	60	60	60
Last Hue (VID PP others)	268	48	48	48	48	48
Last Col.Temp.(VID PP others)	269	4	4	4	4	4
White-D Cool Red	294	0	0	0	0	0
White-D Cool Green	295	1	1	1	1	1
White-D Cool Blue	296	7	7	7	7	7
White-D Normal Red	297	32	32	32	32	32
White-D Normal Green	298	27	27	27	27	27
White-D Normal Blue	299	26	26	26	26	26
White-D Warm Red	300	0	0	0	0	0
White-D Warm Green	301	251	251	251	251	251
White-D Warm Blue	302	239	239	239	239	239
Last Volume	343	24	24	24	24	24
Last Balance	344	50	50	50	50	50
Last Treble (AUD PP others)	345	50	50	50	50	50
Last Bass (AUD PP others)	346	50	50	50	50	50

5.7.2 ATSC Module

ATSC Module check

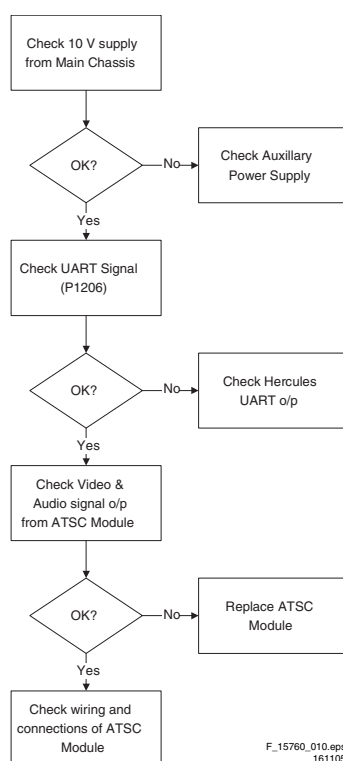


Figure 5-6 Fault finding tree “ATSC Module check”

5.7.3 Power Supply

Set Not Working

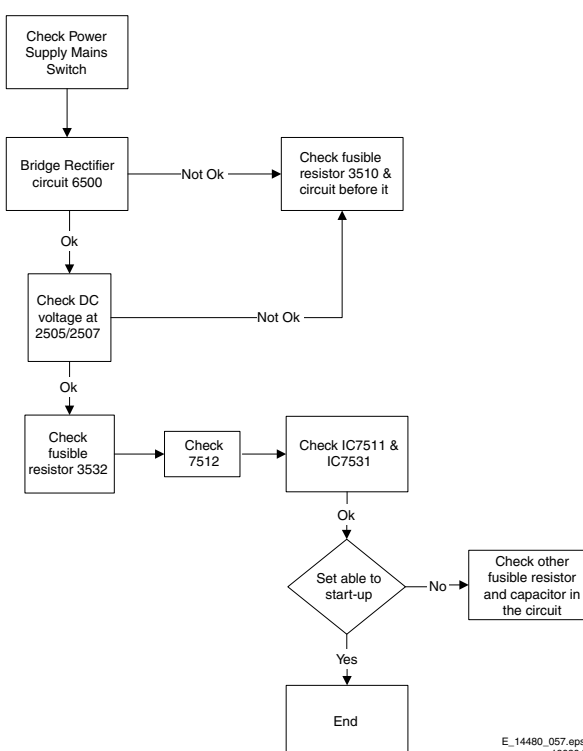


Figure 5-7 Fault finding tree “Set not working”

Set Does Not Start Up

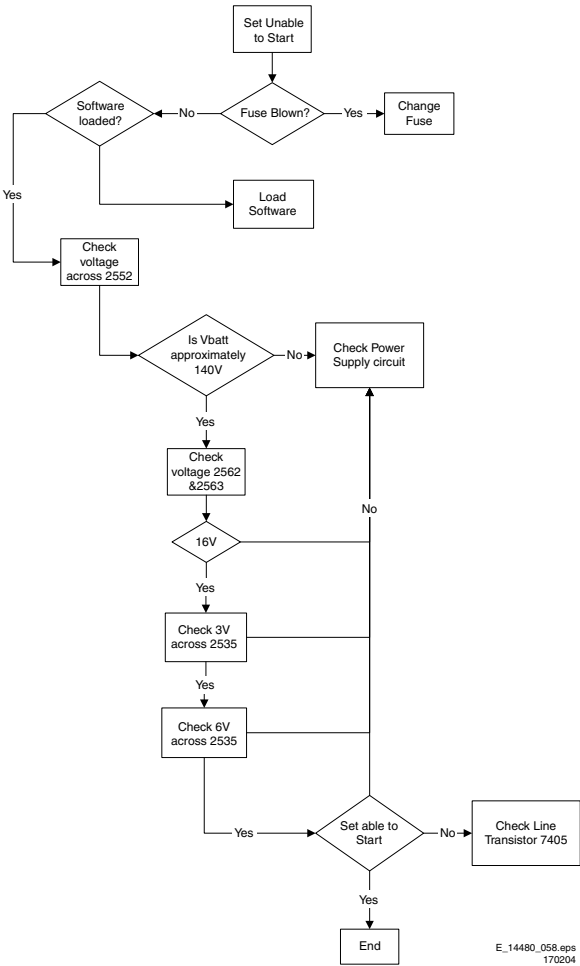


Figure 5-8 Fault finding tree “Set does not start up”

5.7.4 Deflection

One Thin Vertical Line

- Quick check:
- Set in protection mode.
 - LED blinking with error “3”.

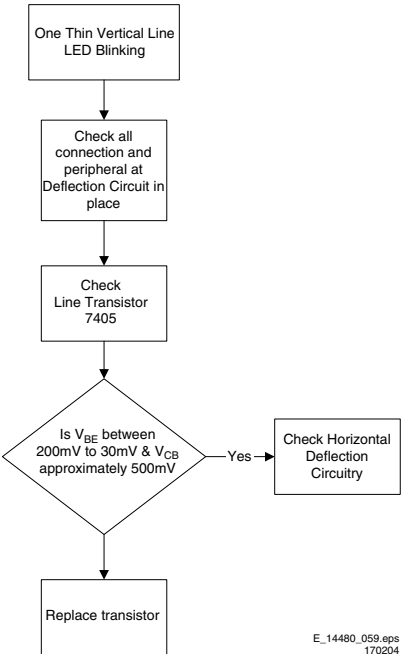


Figure 5-9 Fault finding tree “One thin vertical line”

One Thin Horizontal Line

- Quick check:
- Set in protection mode.
 - LED blinking with error “2”.

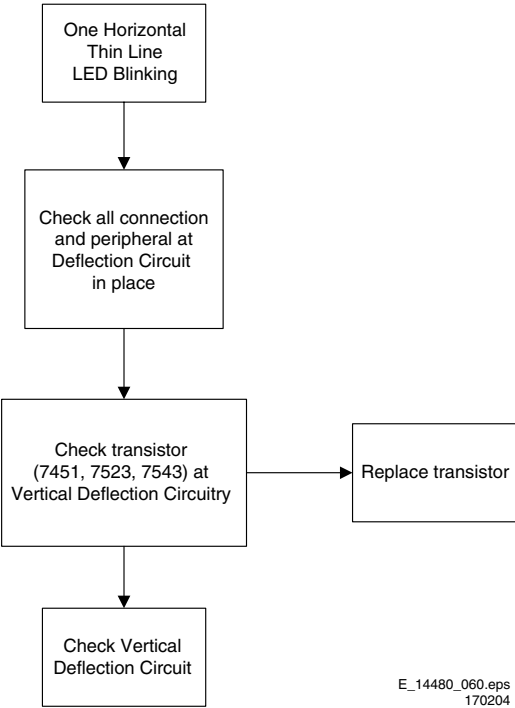


Figure 5-10 Fault finding tree “One thin horizontal line”

Blank Screen

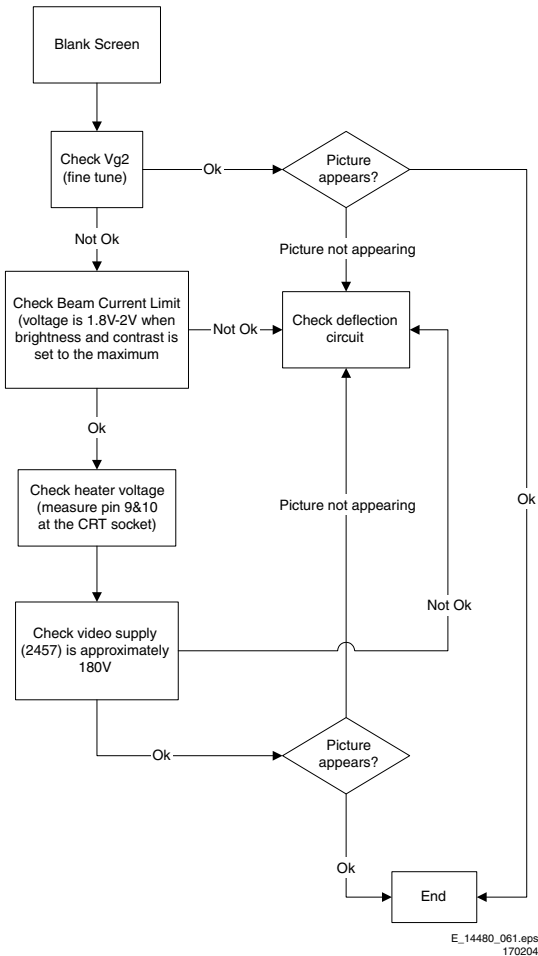


Figure 5-11 Fault finding tree “Blank screen”

5.7.5 Source Selection

Set is not able to go into AV or any missing AV is encountered

E.g. AV1 is available but not able to enter to AV1: Check if the option setting is correct.

Set is able to go to AV, but no Audio is heard.

1. Check that continuity of signal is there from the SCART/ Cinch input to the input of the Hercules.
2. If continuity is there and still no audio, check that option settings are correct.
3. If logic setting is correct and still no audio, proceed to Audio Decoder/Processor troubleshooting section.

Set is able to go into AV but no Video is available:

1. Check continuity from AV input to Hercules depending on the input.
2. If continuity is available and yet no video, proceed to Video Processor troubleshooting section.

5.7.6 Tuner and IF

No Picture

1. Check that the Option settings are correct.
2. If correct, check that supply voltages are there.
3. If supply voltages are present, check whether picture is present in AV.
4. If picture is present in AV, check with the scope the Tuner IF output signal by manual storage to a known channel.
5. If IF output is present, Tuner is working fine. If no IF output, I2C data lines may be open, check continuity of I2C lines. If I2C lines are ok, Tuner may be defect, replaced Tuner.
6. If Tuner IF is present and yet still no picture in RF mode, go to Video Processing troubleshooting section.

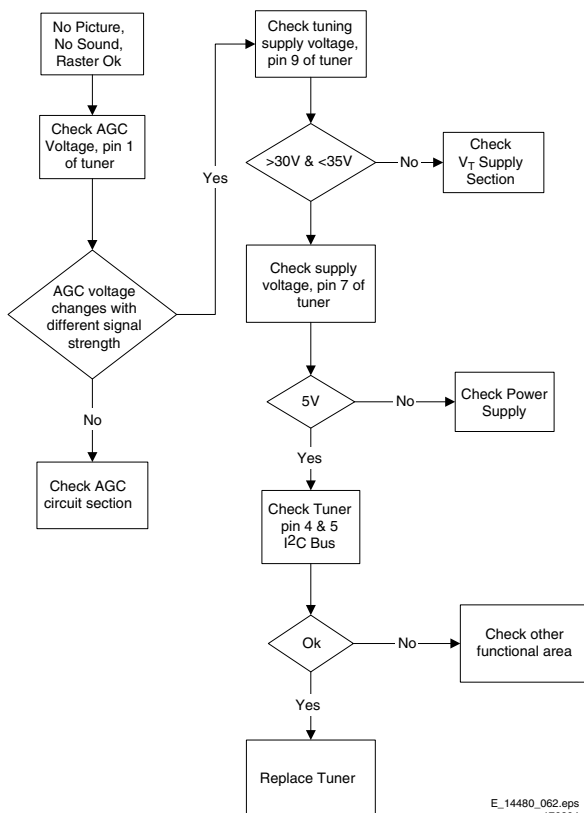
No Picture, No SoundE_14480_062.eps
170204

Figure 5-12 Fault finding tree “No picture, no sound”

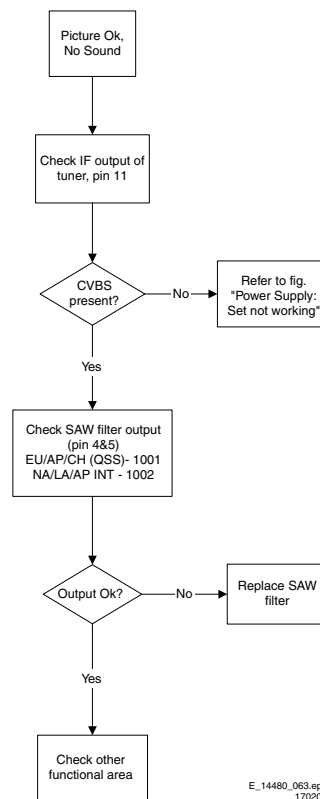
Picture Ok, No SoundE_14480_063.eps
170204

Figure 5-13 Fault finding tree “Picture ok, no sound”

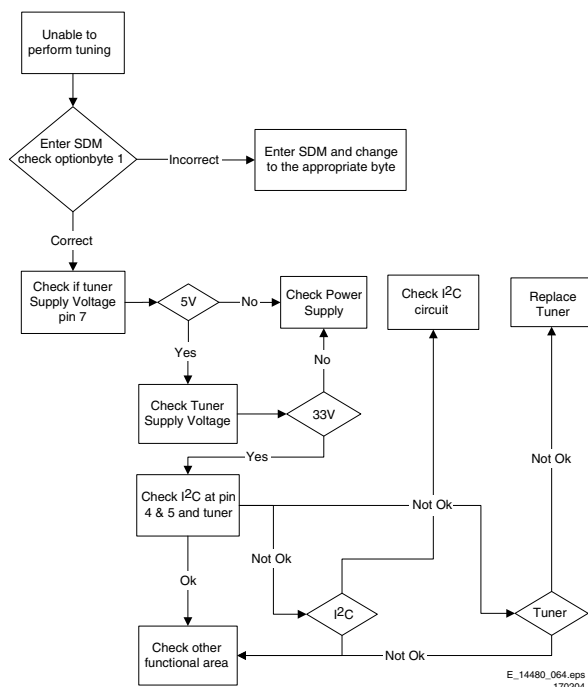
Unable To Perform TuningE_14480_064.eps
170204

Figure 5-14 Fault finding tree “Unable to perform tuning”

5.7.7 Controller

Below are some guidelines for troubleshooting of the Micro Controller function. Normally Micro Controller should be checked when there is a problem of startup.

1. Check that both +3.3 V_{dc} and +1.8 V_{dc} are present.
2. Check that crystal oscillator is working.
3. Check that Power Good signal is at "high" logic, normal operation.
4. Check that Hercules is not in standby mode. Pin 15 of Hercules should be 0 V_{dc}.
5. Make sure H-drive pulse is there. This can be checked at resistor R3239. If H-drive does not exist, remove resistor R3239 to check if there is loading.

Note: When the set shuts down after a few second after power "on", the main cause is that Vg2 not aligned properly, try adjusting Vg2 during the few seconds of power "on".

5.7.8 Video Processing

No Picture

When "no picture in RF", first check if the microprocessor is functioning ok in section "Controller". If that is ok, follow the next steps.

When "no picture in AV", first check if the video source selection is functioning ok in section "Source Selection". If that is ok, follow the next steps.

1. Check that normal operating conditions are met.
2. Check that there is video signal at pin 81. If no video, demodulator part of the Hercules is faulty, replace with new Hercules.
3. If video signal is available at pin 81, check pin 56, 57, and 58 for the RGB signal.
4. If signal is not available, try checking the BRIGHTNESS and/or CONTRAST control, and make sure it is not at zero.
5. If still with the correct settings and no video is available, proceed to the CRT/RGB amplifier diagram.

For sets with Scavem, and Scavem does not work, follow steps below:

1. Check Scavem coil connector (position is 1361) if connected; if not, connect it.
2. If connected, check NVM "bit storage" byte 1 bit 7; if it is not "1", set it to "1".
3. If it is "1", then check the data of the NVM addresses as in table "Default NVM values" (addresses 140, 141, and 142). If the data is not correct, then set these addresses to the table values.
4. If it still not works, track Scavem output from pin64 of Hercules to CRT panel.

5.7.9 Audio Processing

No Sound

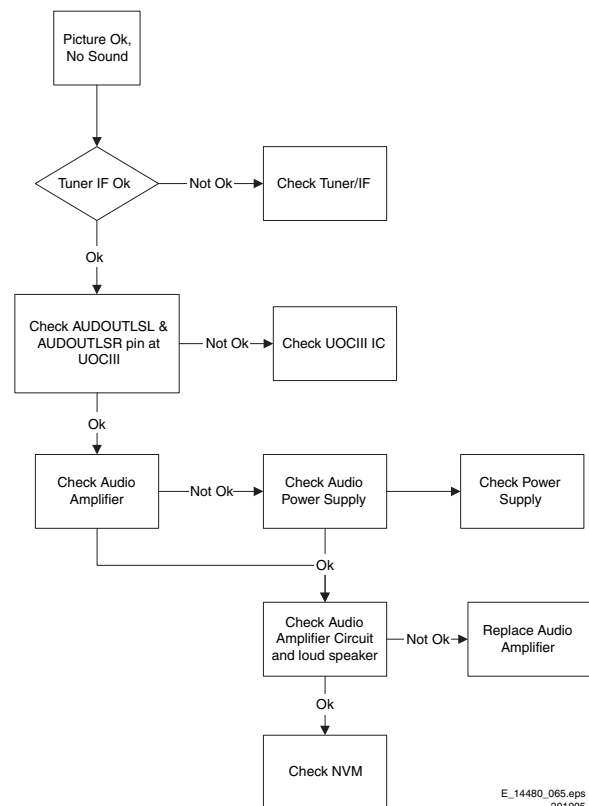


Figure 5-15 Fault finding tree "No sound"

No RF Audio for QSS/Inter-Carrier Stereo Sets.

1. Check pin 99 and 100 for SIF signal (for QSS) or pin 104 and 105 for video with SIF (for Inter-Carrier)
2. If signal is not present, check for the QSS/FMI bit settings. Check also the NVM data.
3. If signals are present and still no audio, check the audio supply voltage +8V are present.
4. If still no audio signal at Hercules output, Hercules is faulty.

No AV Audio.

1. Check troubleshooting methods in section "Source Selection".
2. Check the output of the Hercules to see if there is signal available. If no, check the normal operating condition and also the NVM data.
3. If still no audio signal at Hercules output, Hercules is faulty.

Note: If there is audio signal at Hercules output and no audio at loudspeaker, proceed to Audio Amplifier troubleshooting methods.

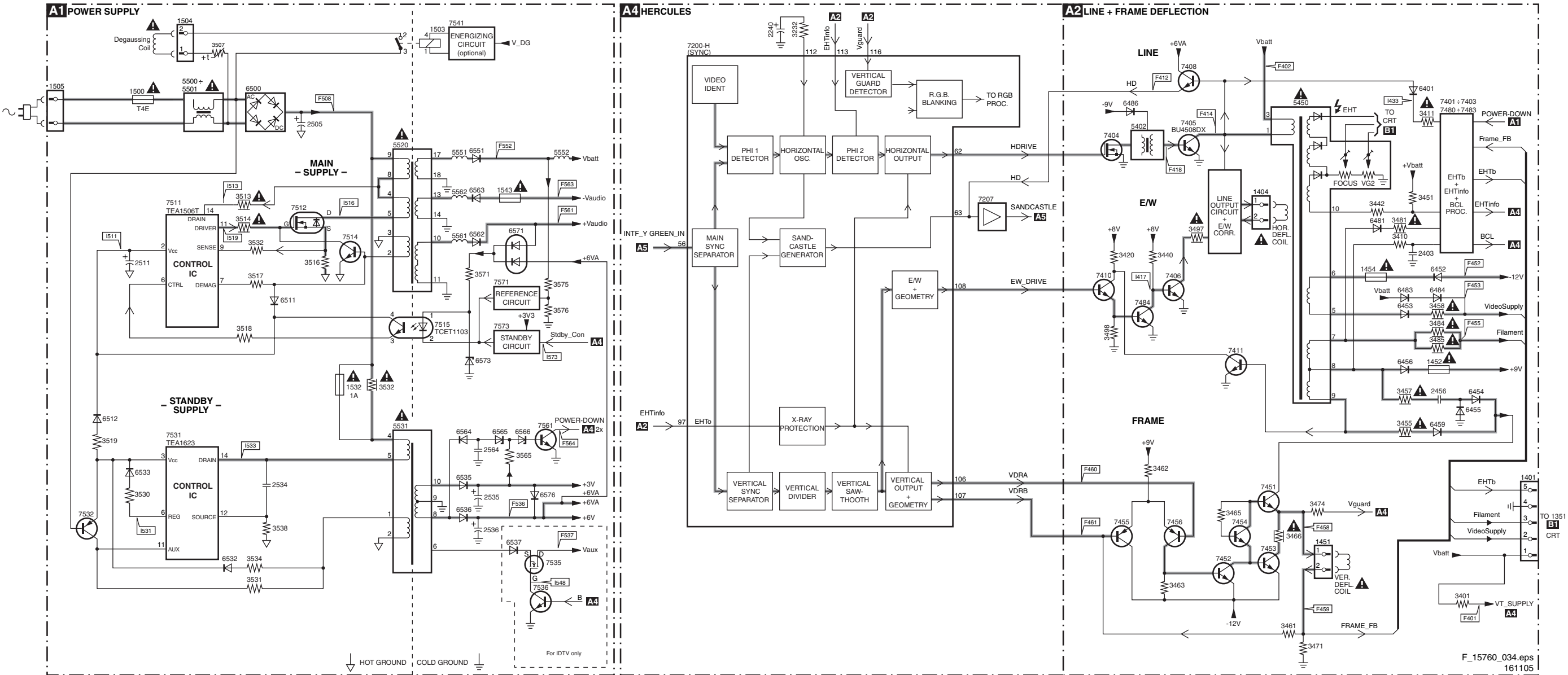
5.7.10 Audio Amplifier

No RF as well as AV Audio at the Loudspeaker:

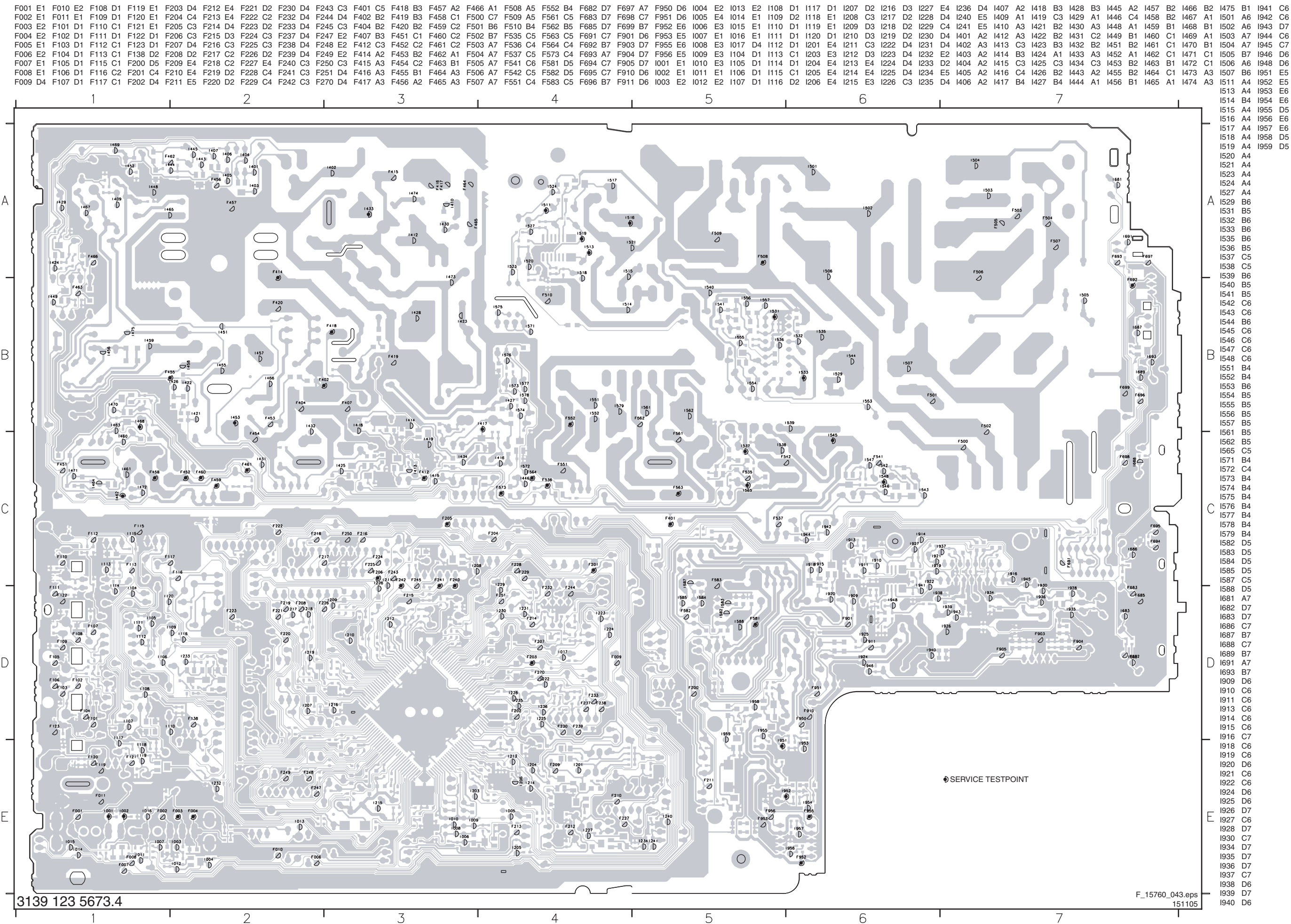
1. Check that the normal operation condition of the amplifier is met.
2. If normal operation conditions are met, check the continuity from Hercules output to input of the amplifier.
3. If continuity is there and still no audio, check speaker wire connections. If still no audio, amplifier IC might be faulty.

Block Diagram Supply and Deflection

SUPPLY AND DEFLECTION

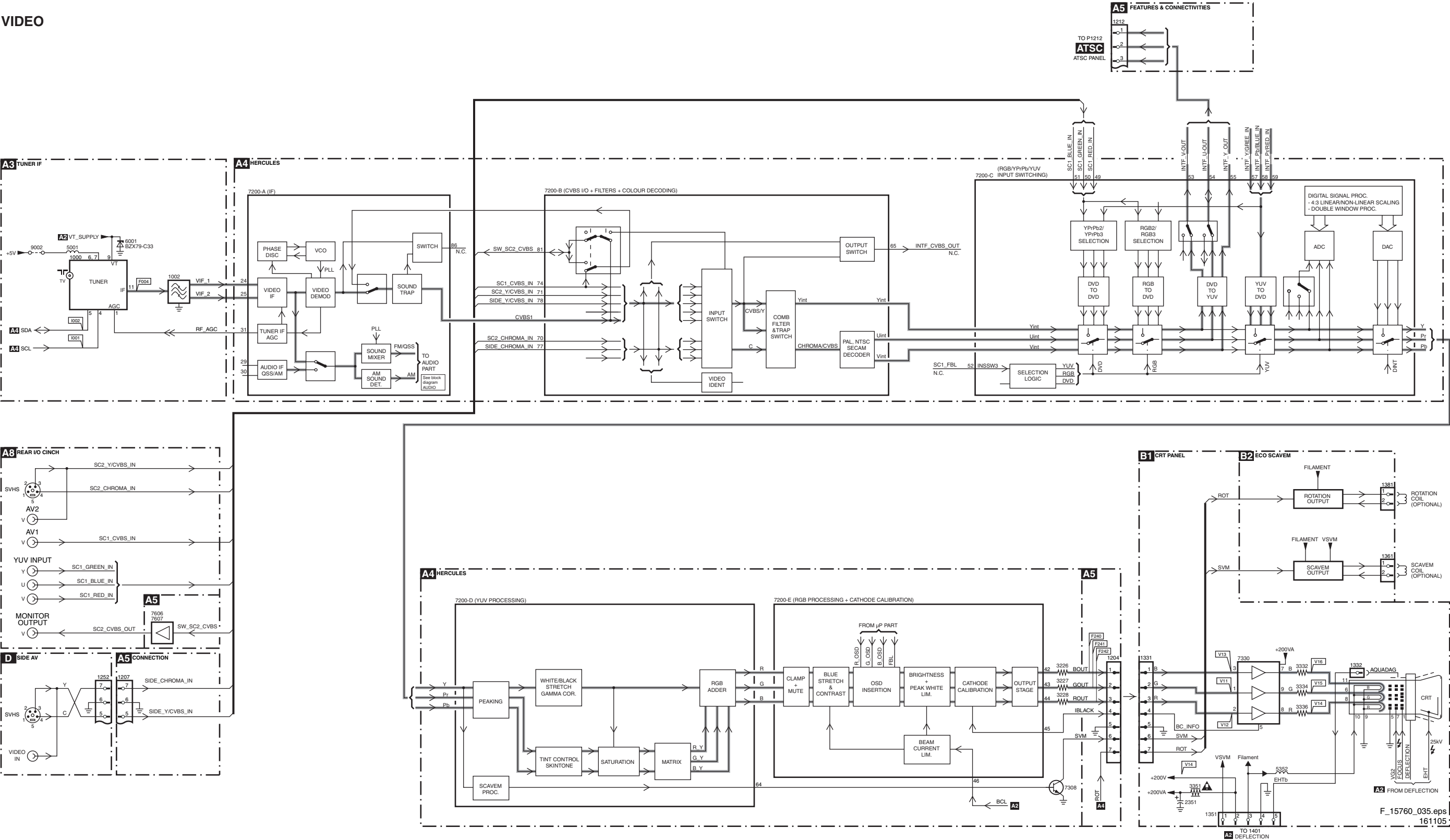


Testpoint Overview Mono Carrier

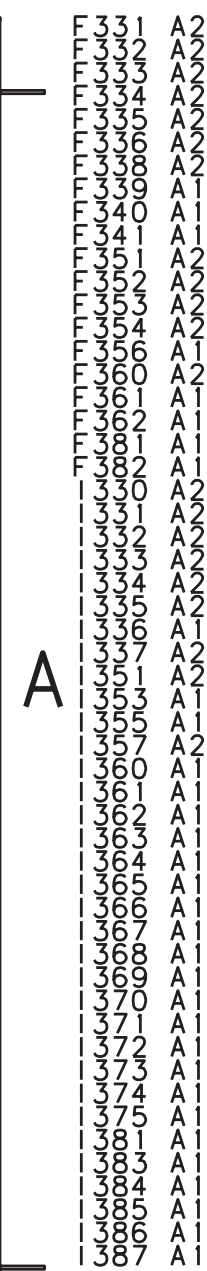


Block Diagram Video

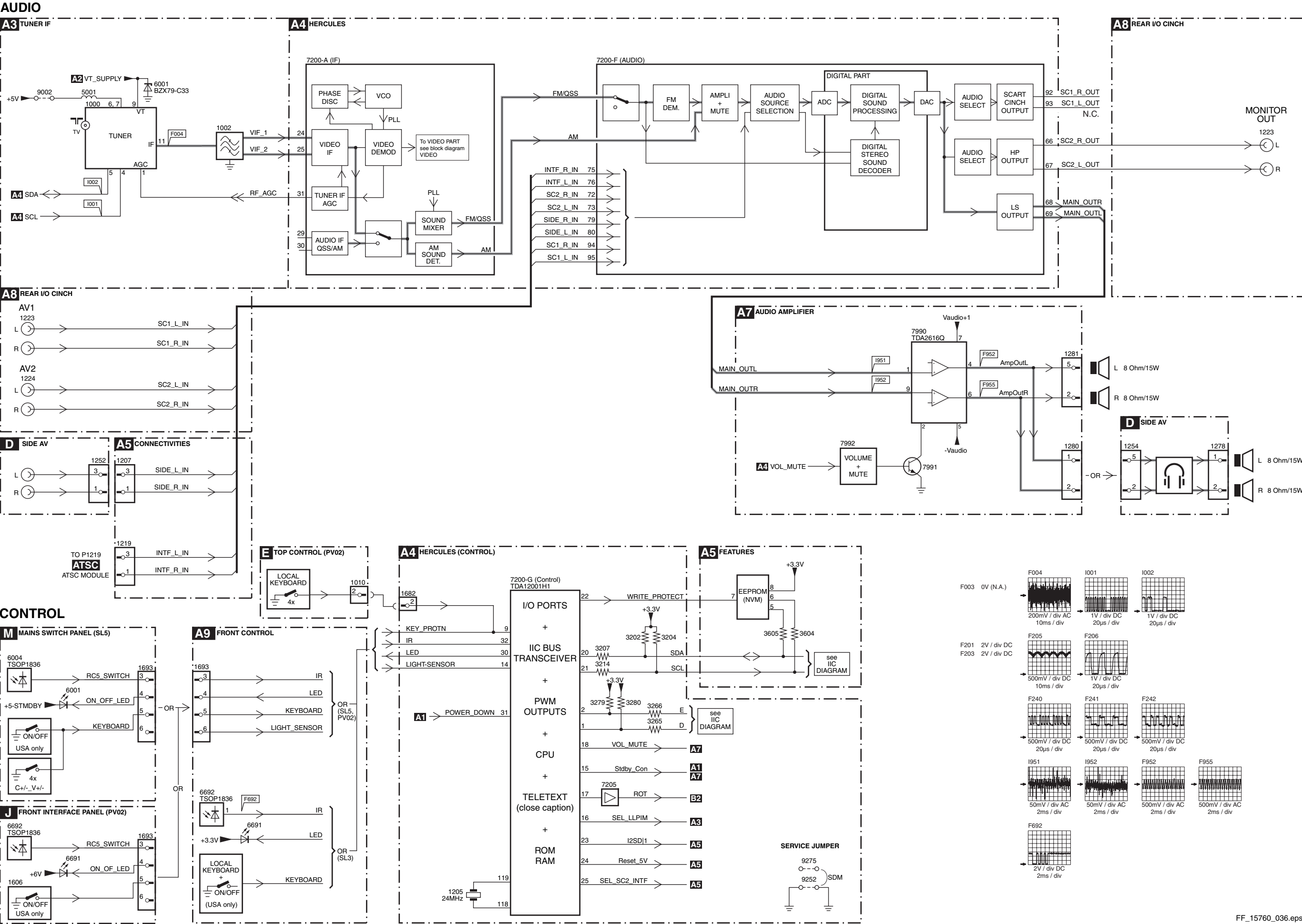
VIDEO



2



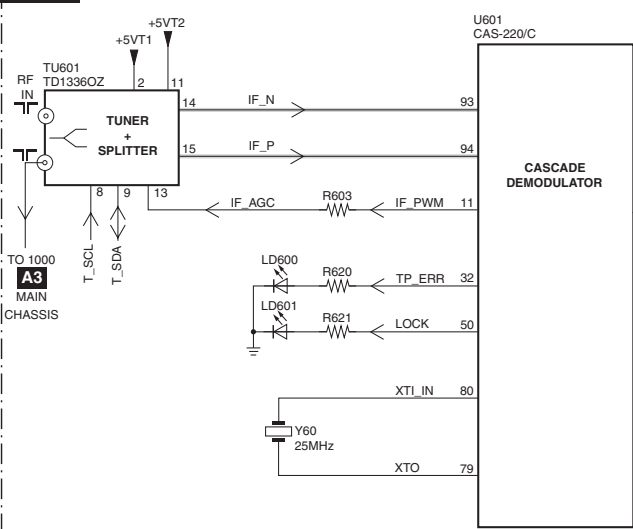
Block Diagram Audio/Control



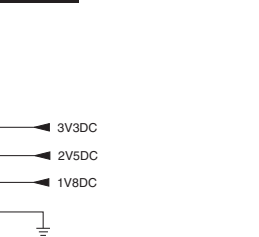
ATSC Block Diagram

ATSC VIDEO / AUDIO

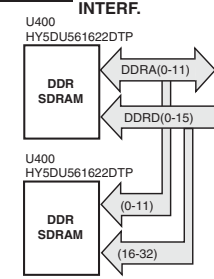
ATSC6 TUNER & OREN CASCADE



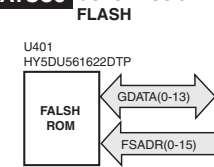
ATSC6 POWER AND GROUND



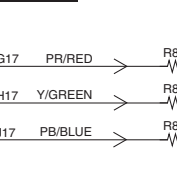
ATSC4 DDR SDRAM INTERF.



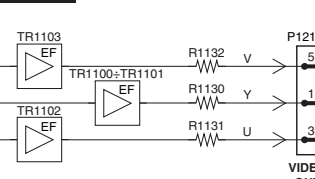
ATSC8 GUEST BUS & FLASH



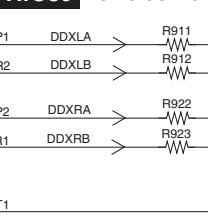
ATSC8 VIDEO OUT



ATSC11 YUV CONVERTER

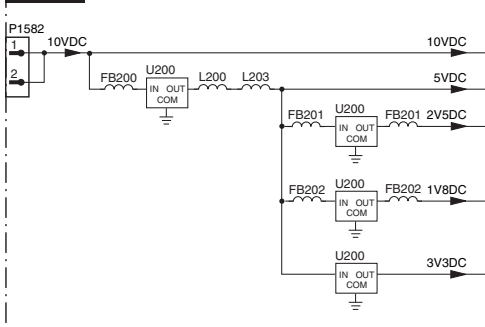


ATSC9 AUDIO OUTPUT



ATSC SUPPLYLINE OVERVIEW

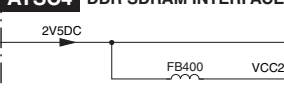
ATSC2 POWER



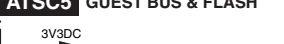
ATSC3 RESET,PADS,SPADE LUG, I2C EEPROM



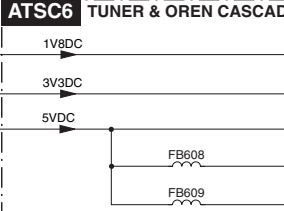
ATSC4 DDR SDRAM INTERFACE



ATSC5 GUEST BUS & FLASH



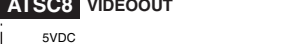
ATSC6 TUNER & OREN CASCADE



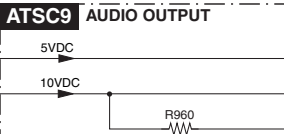
ATSC7 JTAG CONNECTORS / COM UART



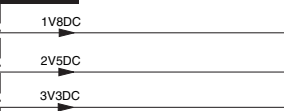
ATSC8 VIDEOOUT



ATSC9 AUDIO OUTPUT



ATSC10 POWER AND GROUND

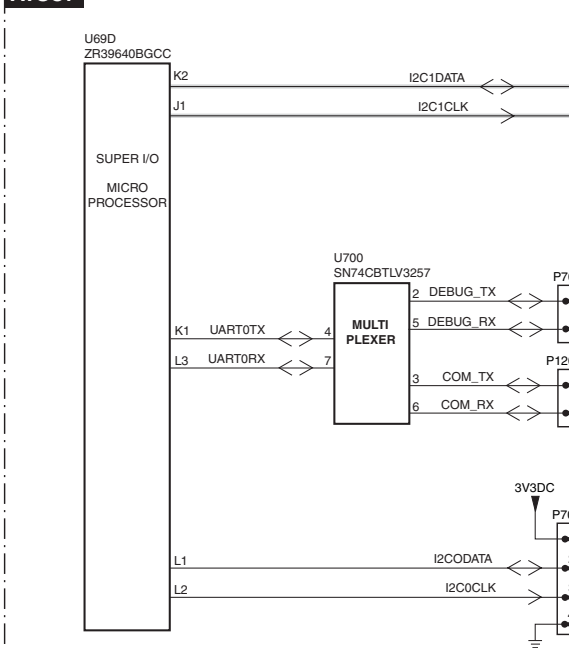


ATSC11 YUV CONVERTER

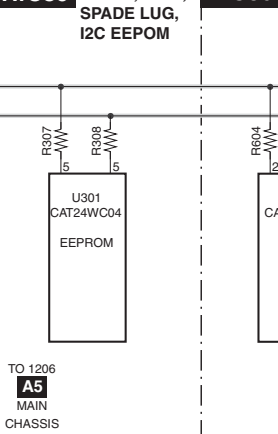


ATSC I2C

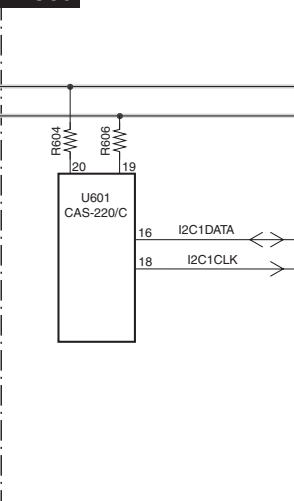
ATSC7 JTAG CONNECTORS / COM UART



ATSC3 RESET,PADS,SPADE LUG, I2C EEPROM

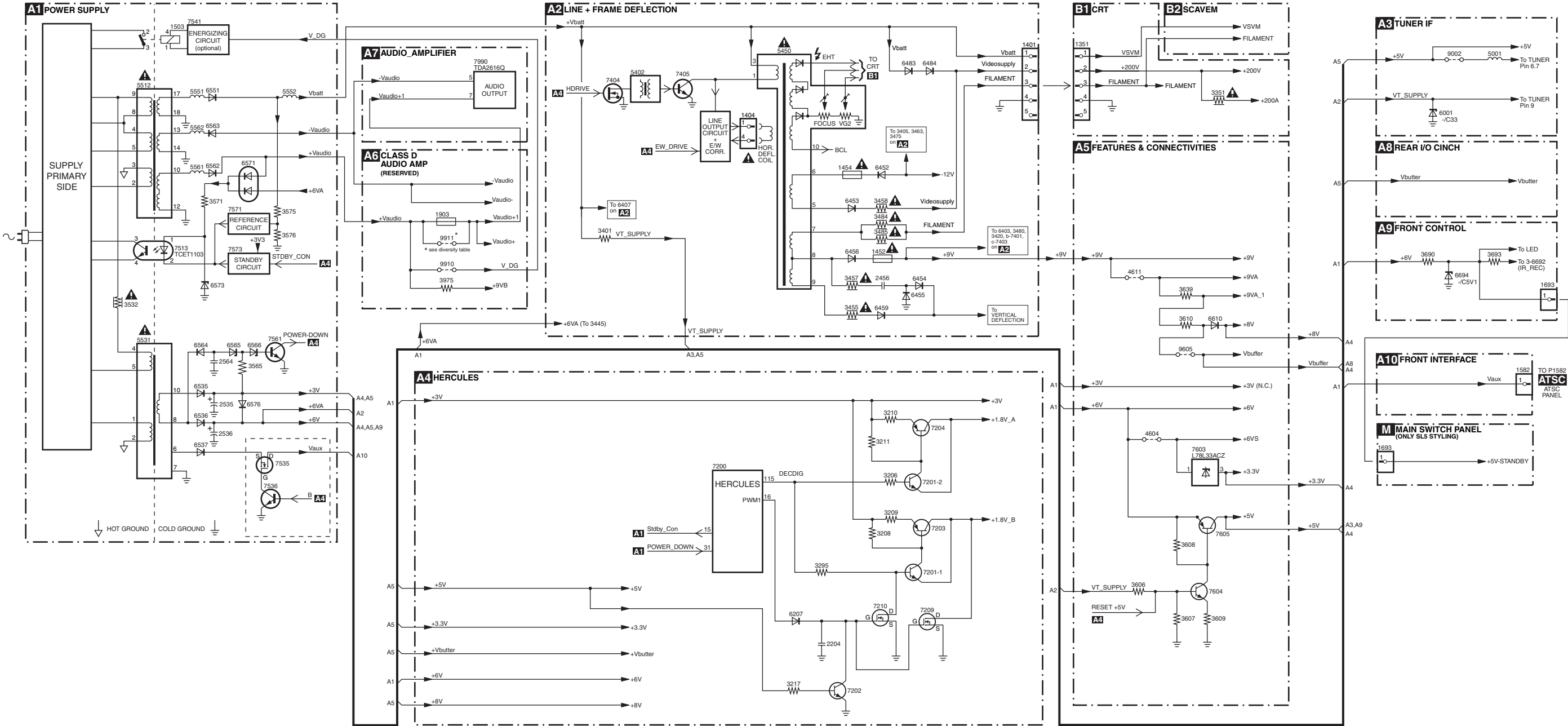


ATSC6 TUNER & OREN CASCADE

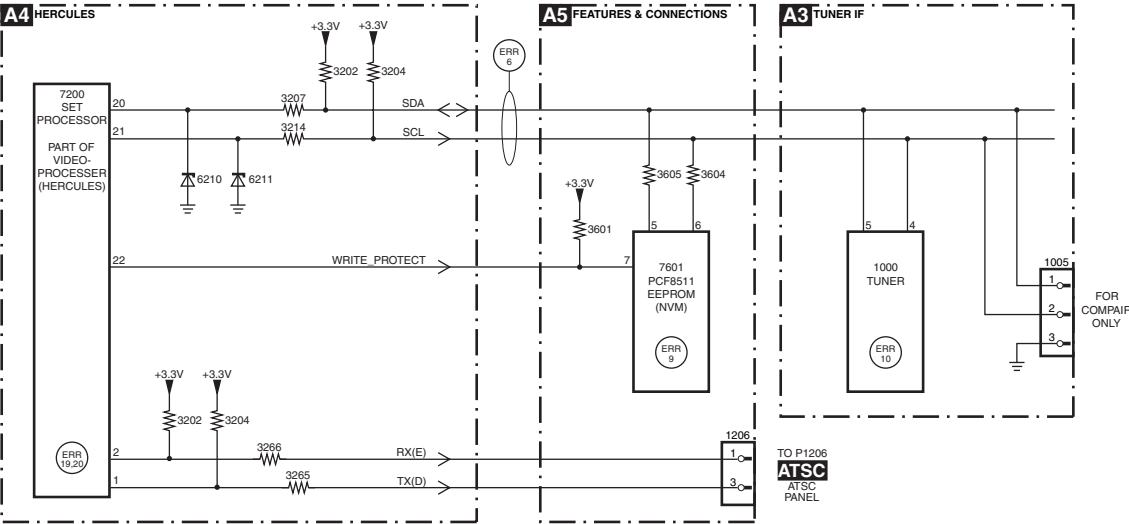


I2C and Supply Voltage Overview

SUPPLY LINES DIAGRAM

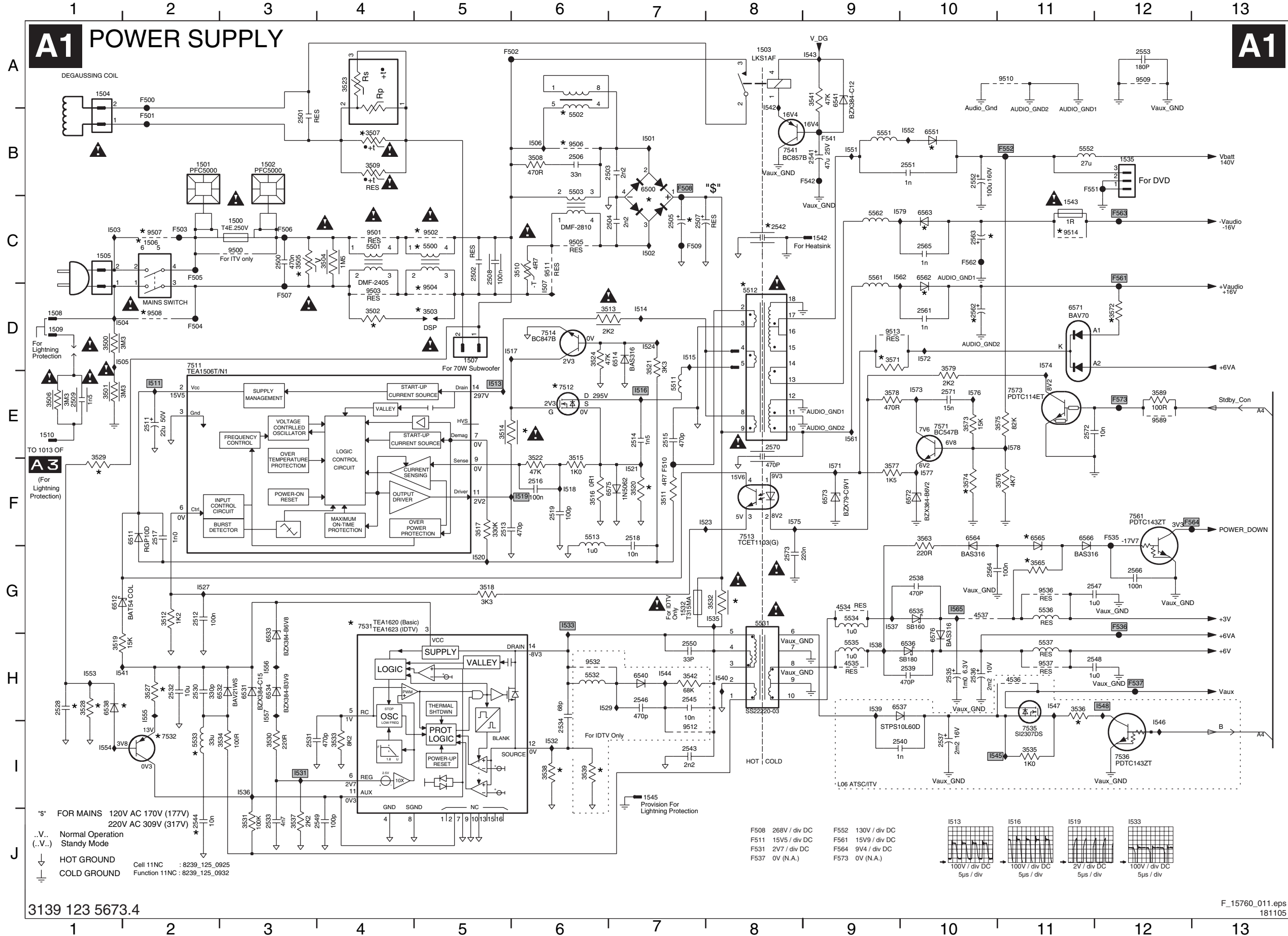


I2C BUS INTERCONNECTION DIAGRAM



7. Circuit Diagrams and PWB Layouts

Mono Carrier: Power Supply



1500 B3	3575 D10	1514 C7
1501 B3	3576 E10	1515 D7
1502 B3	3577 D9	1516 D7
1503 A8	3578 D9	1517 C5
1504 A2	3579 D9	1518 E6
1505 C2	3580 D11	1519 E5
1506 C2	4534 F8	1520 E5
1507 D5	4535 F8	1521 D6
1508 C1	4536 F10	1523 E7
1509 C1	4537 F10	1524 C7
1510 D1	5500 C5	1527 F3
1532 F7	5501 C4	1529 G6
1535 B11	5502 A6	1531 G4
1542 B8	5503 B6	1532 G6
1543 B10	5511 D7	1533 F6
1545 G7	5512 C7	1535 F7
2500 C3	5513 E6	1536 G3
2501 A4	5531 F8	1537 F9
2502 C5	5532 F6	1538 F9
2503 B6	5533 G3	1539 G8
2504 B6	5534 F8	1540 F7
2505 B7	5535 F8	1541 F2
2506 B6	5536 F10	1542 A8
2507 B7	5537 F10	1543 A8
2508 C5	5551 B9	1544 F7
2509 D2	5552 B10	1545 G10
2511 D2	5561 C9	1546 G11
2512 F3	5562 B9	1547 G10
2513 E5	6500 B7	1548 G11
2514 D6	6511 E2	1551 B8
2515 D7	6512 E2	1552 B9
2516 E6	6514 D6	1553 F2
2517 E2	6531 F3	1554 G2
2518 E6	6532 F3	1555 G2
2519 E6	6533 F3	1556 F3
2528 G1	6534 F3	1557 G3
2530 F3	6535 F9	1561 D8
2531 G4	6536 F9	1562 C9
2532 F2	6537 G9	1565 F9
2533 H3	6538 G2	1571 D8
2534 G6	6540 F7	1572 D9
2535 F9	6541 A8	1573 D9
2536 F9	6551 B9	1574 D10
2537 G9	6562 C9	1575 E8
2538 E9	6563 B9	1576 D9
2539 F9	6564 E9	1577 E9
2540 G9	6565 E10	1578 D10
2541 B8	6566 E10	1579 B9
2542 B8	6571 C10	
2543 G7	6572 E9	
2544 H3	6573 E8	
2545 G7	6575 E8	
2546 G7	6576 F9	
2547 F11	7511 D3	
2548 F11	7512 D6	
2549 H4	7513 E8	
2550 F7	7514 C6	
2551 B9	7531 F4	
2552 B9	7532 G2	
2553 A11	7535 G10	
2561 C9	7536 G11	
2562 C9	7541 B8	
2563 B9	7561 E11	
2564 E10	7571 D9	
2565 C9	7573 D10	
2566 E11	9500 C3	
2570 D8	9501 B4	
2571 D9	9502 B5	
2572 D10	9503 C4	
2573 E8	9504 C5	
3500 C2	9505 C6	
3501 D2	9506 B6	
3502 C4	9507 B2	
3503 C5	9508 C2	
3504 C4	9509 A11	
3505 C4	9510 A10	
3506 D1	9511 C6	
3507 B4	9512 G7	
3508 B6	9513 C9	
3509 B4	9514 B10	
3510 C5	9515 B10	
3511 E7	9536 F10	
3512 F2	9537 F10	
3513 C6	9589 D11	
3514 D5	F500 A2	
3515 D6	F501 A2	
3516 E6	F502 A5	
3517 E5	F503 B2	
3518 F5	F504 C3	
3519 F2	F505 C3	
3520 E6	F506 B3	
3521 D7	F507 C3	
3522 D6	F508 B7	
3523 A4	F509 C7	
3524 D6	F510 D7	
3527 F2	F535 E11	
3528 G2	F536 F11	
3529 D2	F537 F11	
3530 G3	F541 B8	
3531 H3	F542 B8	
3532 F7	F551 B10	
3533 G4	F552 B10	
3534 G3	F561 C11	
3535 G10	F562 C9	
3536 G10	F563 B11	
3537 H3	F564 E11	
3538 G6	F573 D11	
3539 G6	I501 B7	
3541 A8	I502 C7	
3542 F7	I503 B2	
3563 E9	I504 C2	
3565 E10	I505 D2	
3571 D9	I506 B6	
3572 C11	I507 C6	
3573 D9	I511 D2	
3574 E9	I513 D5	

Mono Carrier: Diversity Table for [A1]

1

2

3

4

5

6

7

8

9

10

11

12

13

DIVERSITY TABLE FOR

A1

POWER SUPPLY

REGION

NAFTA

MAIN RANGE

LR

27RF
27FSQ

32RF

26WSRF
30WSRF
32FSQ

21RF

25RF
29FSQ

29RF

29RF

28WSSF

28WSRF
32WSRF

130V

130V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

29RF

24WR
25/28BLD

28WSRF

32WSRF

130V

130V

130V

130V

130V

130V

130V

143V

143V

143V

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

2X10W

2X5W
2X10W

2X5W
2X10W

2X5W
2X10W

21/25RF

29RF

34RF

21/29RF

21/29RF
29FSQ

21RF

29RF
28WSSF

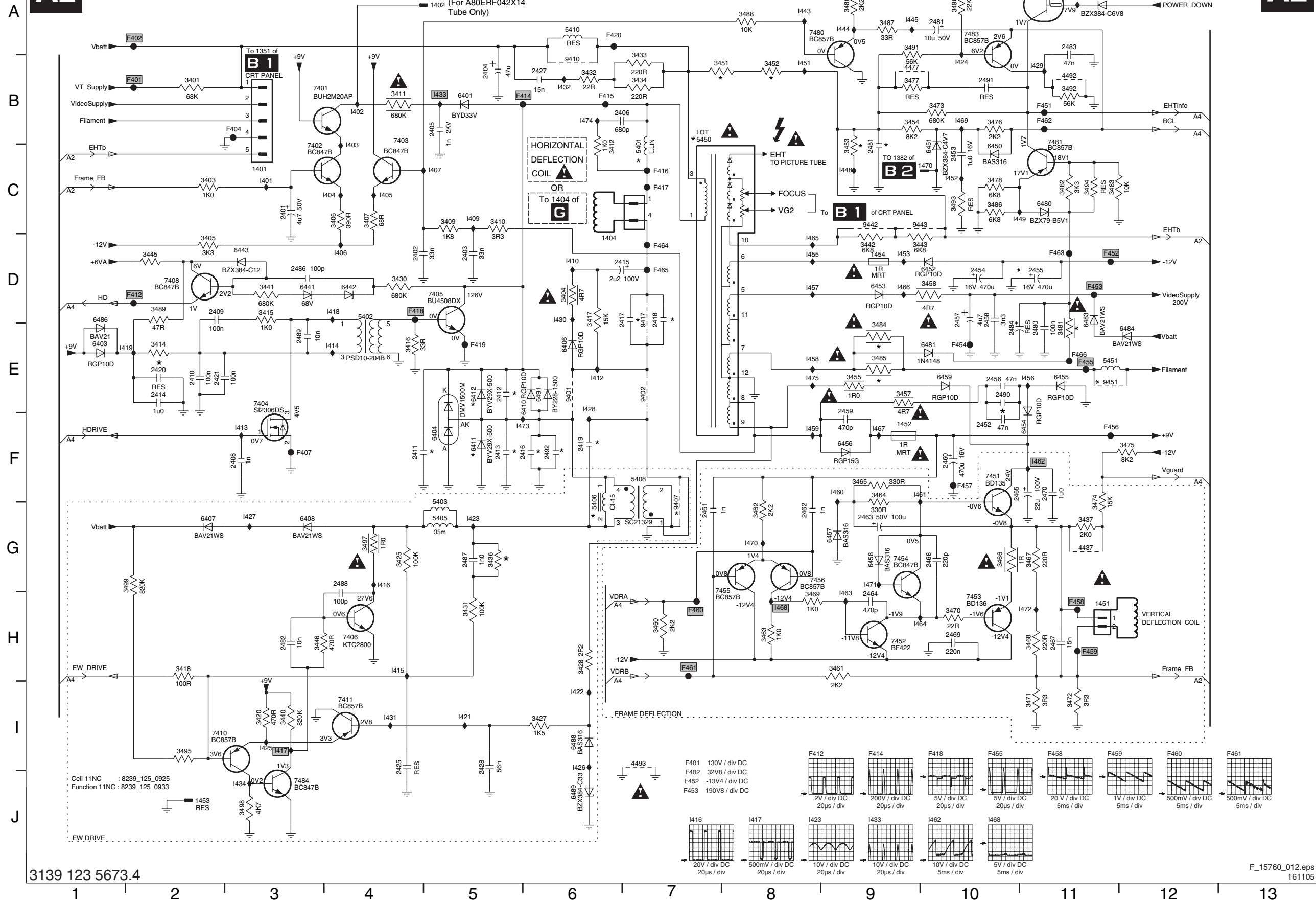
29RF

24WR
25/28BLD

28WSRF

<

A2 LINE + FRAME DEFLECTION



1401 A3	5405 E5	1468 F8
1402 A4	5406 E6	1469 B9
1403 A5	5408 E8	1470 F7
1404 A6	5410 A0	1471 F8
1405 E9	5450 B7	1472 F10
1453 H3	5551 D10	1473 E5
1454 E8	5601 B5	1474 B8
1470 B9	5403 D2	1475 D8
2401 C3	6404 E5	
2402 C4	6406 E6	
2403 C5	6408 E8	
2404 A5	6408 E8	
2405 B5	6410 D5	
2406 C6	6411 E5	
2408 D3	6412 D5	
2409 D3	6441 C4	
2410 D5	6442 C4	
2411 E4	6443 C3	
2412 D5	6450 B9	
2413 E5	6451 B9	
2414 D2	6452 C9	
2415 C6	6453 C8	
2416 E5	6454 E10	
2417 D6	6455 D10	
2418 D7	6456 E8	
2419 E6	6457 E8	
2420 D2	6458 F8	
2421 D3	6459 D9	
2425 A4	6480 C10	
2427 A6	6481 D9	
2428 E5	6482 A10	
2429 B8	6483 D10	
2430 E9	6484 D11	
2453 B9	6486 D2	
2454 C4	6487 D2	
2455 C10	6488 H6	
2456 D9	6491 D5	
2457 D9	7401 B4	
2458 D9	7402 B4	
2459 D8	7403 B4	
2460 E9	7404 D3	
2461 E7	7405 C3	
2462 E8	7406 F4	
2463 E8	7408 C2	
2464 D3	7410 C3	
2465 D10	7411 G4	
2467 F10	7451 E9	
2468 F9	7452 F9	
2469 F9	7453 F9	
2480 D10	7455 F7	
2481 E7	7456 F8	
2482 F3	7458 A8	
2483 A10	7459 B10	
2484 D10	7482 B10	
2486 C3	7483 A5	
2487 F5	7484 H3	
2488 F4	9401 D6	
2489 D3	9402 D6	
2490 D10	9407 E7	
2491 B9	9410 A6	
2492 E6	9417 D6	
2493 C4	9420 E6	
2494 C3	9443 C9	
2495 C6	9451 D10	
2496 C3	9452 B5	
3404 C4	F402 A2	
3407 C4	F404 B3	
3409 C5	F407 E3	
3410 C5	F412 C2	
3411 B4	F414 B5	
3412 B6	F415 B6	
3413 D2	F416 B7	
3415 D3	F417 B7	
3416 D4	F418 D4	
3417 D6	F451 C10	
3418 D2	F420 A6	
3420 G3	F451 B10	
3425 F4	F452 C10	
3427 G6	F453 C10	
3428 G6	F454 D9	
3430 C4	F455 D10	
3431 B5	F456 E10	
3432 A6	F457 E9	
3433 A6	F458 F10	
3434 B6	F459 F10	
3436 F3	F460 F7	
3437 E10	F461 G7	
3440 G3	F462 B10	
3441 C3	F463 C10	
3442 C8	F464 C7	
3443 F9	F465 C7	
3444 F9	F466 D10	
3451 A7	I402 B4	
3452 A8	I403 B4	
3453 B8	I404 C4	
3454 B9	I405 C4	
3455 D8	I406 C5	
3457 D9	I407 B5	
3458 C9	I409 C2	
3460 F7	I410 C6	
3461 G8	I412 D6	
3462 E7	I413 E3	
3463 F7	I414 G4	
3464 E8	I415 D4	
3465 E8	I416 F4	
3466 F9	I417 G3	
3467 F10	I418 D4	
3468 F10	I419 D2	
3469 F9	I421 G5	
3470 F9	I422 G6	
3471 D10	I423 E5	
3472 C10	I424 A9	
3473 B9	I425 G3	
3474 E10	I426 G3	
3475 E11	I427 E3	
3476 B9	I428 D6	
3477 B9	I429 A10	
3478 B9	I430 D6	
3480 A5	I431 G4	
3481 D10	I432 B5	
3482 B10	I433 B6	
3483 B10	I434 B3	
3484 D8	I443 A8	
3485 D8	I444 A8	
3486 F9	I445 A9	
3487 A9	I446 A10	
3488 A9	I448 B8	
3489 C9	I449 C10	
3490 A9	I451 A8	
3491 A9	I452 B9	
3492 B10	I453 C8	
3493 C9	I455 C8	
3494 B10	I456 D10	
3495 G2	I457 C8	
3497 F4	I458 D8	
3498 H3	I459 E8	
3499 F2	I460 E8	
4337 F10	I461 E9	
4337 A9	I462 E10	
4338 B10	I463 F8	
4393 G6	I464 F9	
5401 E6	I465 E8	
5402 D4	I466 C9	
5403 E5	I467 C8	

Mono Carrier: Diversity Table for [A2]

1 2 3 4 5 6 7 8 9 10 11 12 13

DIVERSITY TABLE FOR **A2** DEFLECTION

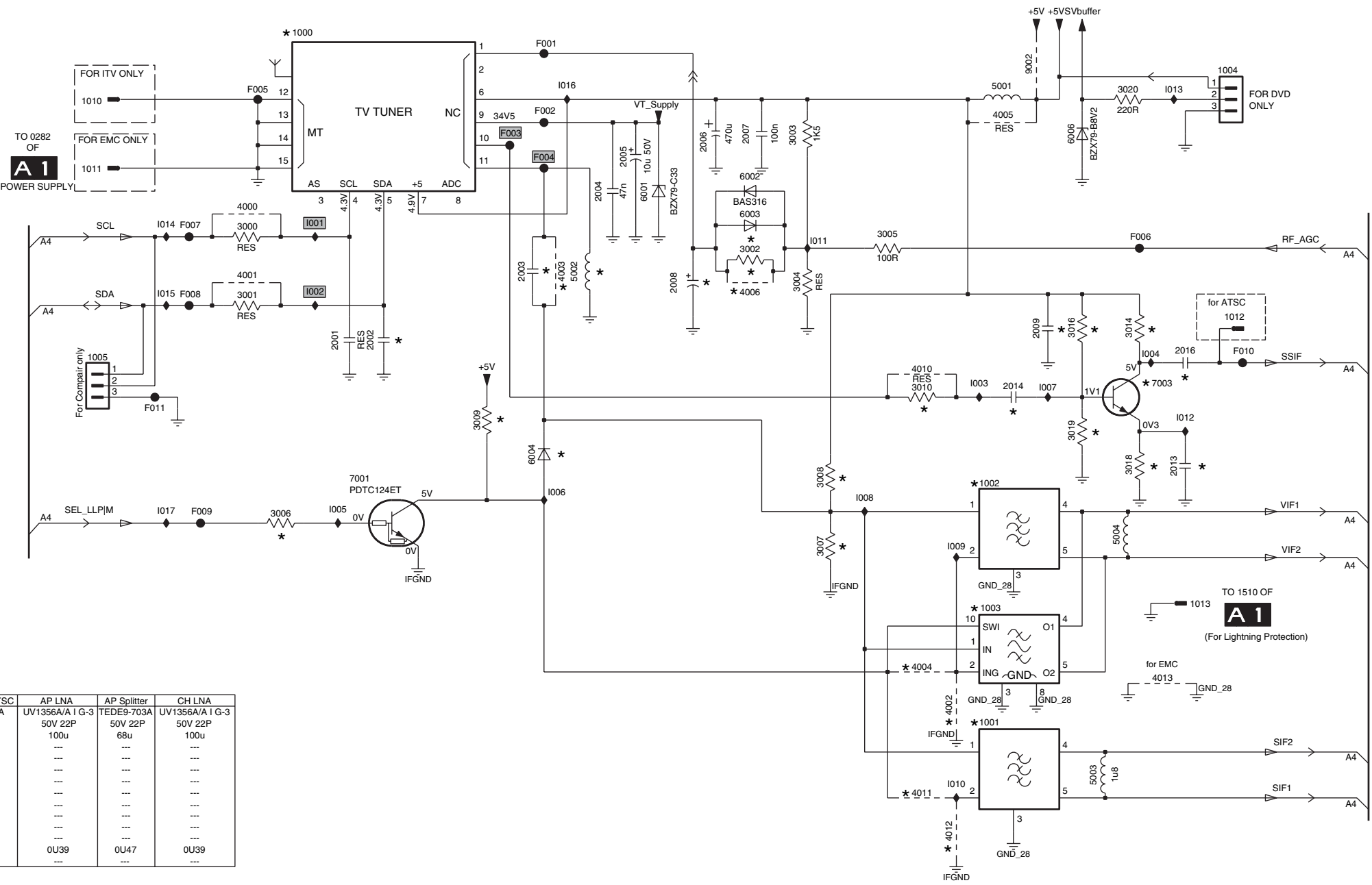
Region	NAFTA							LATAM						AP				CHINA				INDIA			
Tube	LPD	LPD	LPD	LPD	LPD	LPD	SMGK	LPD	LPD	LPD	LPD	LPD	SMGK	CPT	LPD	LPD	LPD	LPD	LPD	LPD	LPD	LPD	CPD	LPD	SMGK
Size	27 V	28 WR	29 RF	32 V	32 V RF	32 WR	25 RF	25 RF	27V	28WS	28WR	32WR	29RF	21RF	25RF	29RF	32WR	34RF	25RF	21RF	29RF	34RF	21RF	29RF	29FSQ
2411	470pF	1.2nF	1.5nF	2.2nF	680pF	330pF	1.2nF	680nF	470pF	1.2nF	1.2nF	330pF	1.5nF	220pF	680nF	1.2nF	330pF	1nF	680nF	220pF	1.2nF	1nF	220pF	1.2nF	680pF
2412	12nF	13nF	15nF	15nF	12nF	15nF	13nF	15nF	12nF	15nF	13nF	15nF	15nF	12nF	15nF	8n2	13nF	12nF	15nF	8n2	15nF	12nF	8n2	15nF	13nF
2413	120nF	15nF	39nF	33nF	33nF	18nF	33nF	33nF	120nF	18nF	15nF	18nF	39nF	68nF	33nF	33nF	18nF	33nF	33nF	68nF	33nF	33nF	68nF	33nF	39nF
2416	-	3n3	-	4n7	-	-	4n7	-	-	2n2	3n3	-	-	-	3n3	-	3n3	-	-	-	3n3	-	-	3n3	-
2418	390nF	-	330nF	470nF	270nF	-	390nF	360nF	390nF	-	-	-	330nF	220nF	360nF	330nF	-	300nF	360nF	270nF	330nF	300nF	220nF	330nF	390nF
2419	-	390nF	2u2	2u2	2u2	430nF	2u2	2u2	-	470nF	390nF	430nF	2u2	-	2u2	2u2	430nF	2u2	2u2	2u2	2u2	2u2	2u2	2u2	2u2
2425	-	33nF	33nF	33nF	10nF	33nF	33nF	33nF	33nF	33nF	33nF	33nF	33nF	-	33nF	33nF	33nF	33nF	10nF	33nF	-	33nF	10nF	-	33nF
2451	150nF	150nF	180nF	180nF	150nF	180nF	100nF	100nF	150nF	120nF	150nF	180nF	100nF	120nF	120nF	220nF	180nF	270nF	120nF	220nF	220nF	270nF	120nF	220nF	220nF
2457	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7
2487	-	1n5	1n5	1n5	2n2	1n5	1n5	1n5	-	1n5	1n5	1n5	3n3	1nF	1n5	1nF	1n5	3n3	1n5	1nF	1nF	3n3	1nF	1nF	1nF
2490	47n	-	-	-	-	-	47n	-	47n	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3224	680K 5%	680K 5%	680K 5%	680K 5%	560K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	560K 5%	680K 5%	680K 5%	680K 5%	1M 5%	680K 5%	680K 5%	1M 5%	680K 5%	1M 5%	680K 5%	1M 5%	1M 5%	680K 5%	1M 5%
3295	8K2 5%	10K 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	7K5 1%	8K2 5%	8K2 5%	8K2 5%	7K5 1%	8K2 5%	10K 5%	8K2 5%
3414	1R 1W 5%	2R2 1W 5%	1R 1W 5%	0R33 1W 5%	1R 1W 5%	6R8 1W 5%	3R3 1W 5%	1R 1W 5%	1R 1W 5%	4R7 1W 5%	2R2 1W 5%	6R8 1W 5%	0R33 1W 5%	10R 1W 5%	1R 1W 5%	1R 1W 5%	6R8 1W 5%	6R8 1W 5%	1R 1W 5%	4R7 1W 5%	1R 1W 5%	6R8 1W 5%	10R 1W 5%	1R 1W 5%	4R7 1W 5%
3431	82K 1%	82K 1%	82K 1%	82K 1%	10K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	10K 1%	82K 1%	82K 1%	82K 1%	10K 1%	82K 1%	82K 1%	82K 1%
3451	68K 1%	82K 1%	68K 1%	75K 1%	68K 1%	82K 1%	68K 1%	68K 1%	68K 1%	120K 1%	82K 1%	82K 1%	68K 1%	82K 1%	68K 1%	68K 1%	82K 1%	68K 1%	68K 1%	68K 1%	68K 1%	68K 1%	68K 1%	68K 1%	56K 1%
3452	18K 5%	15K 5%	15K 5%	15K 5%	6K8 5%	18K 5%	18K 5%	18K 5%	18K 5%	27K 5%	15K 5%	6K8 5%	18K 5%	15K 5%	18K 5%	15K 5%	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	15K 5%	18K 5%
3453	33K 5%	22K 5%	33K 5%	22K 5%	33K 5%	22K 5%	33K 5%	33K 5%	33K 5%	33K 5%	22K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%	33K 5%
3467	120R 5%	120R 5%	120R 5%	220R 5%	150R 5%	220R 5%	120R 5%	120R 5%	120R 5%	220R 5%	120R 5%	220R 5%	120R 5%	220R 5%	120R 5%	120R 5%	120R 5%	150R 5%	120R 5%	220R 5%	150R 5%	120R 5%	220R 5%	120R 5%	220R 5%
3468	220R 5%	150R 5%	150R 5%	150R 5%	150R 5%	220R 5%	150R 5%	150R 5%	220R 5%	220R 5%	150R 5%	220R 5%	150R 5%	220R 5%	150R 5%	150R 5%	150R 5%	150R 5%	150R 5%	220R 5%	150R 5%	150R 5%	220R 5%	150R 5%	220R 5%
3471	-	2R7 1%	2R4 1%	2R4 1%	2R2 1%	1R8 1%	2R2 1%	2R4 1%	-	2R2 1%	2R7 1%	1R8 1%	1R8 1%	2R2 1%	2R4 1%	2R4 1%	1R8 1%	2R2 1%	2R4 1%	3R9 1%	2R4 1%	2R2 1%	2R2 1%	2R4 1%	2R2 1%
3472	3R3 1%	2R4 1%	2R4 1%	2R7 1%	2R2 1%	3R3 1%	2R4 1%	2R4 1%	3R3 1%	3R3 1%	2R4 1%	3R9 1%	2R4 1%	3R9 1%	2R4 1%	2R4 1%	3R3 1%	2R2 1%	2R4 1%	4R7 1%	2R4 1%	2R2 1%	3R9 1%	2R4 1%	2R2 1%
3473	390K 5%	680K 5%	820K 5%	820K 5%	820K 5%	820K 5%	680K 5%	820K 5%	390K 5%	1M 5%	680K 5%	820K 5%	1M 5%	390K 5%	820K 5%	820K 5%	680K 5%	820K 5%	430K 5%	820K 5%	680K 5%	430K 5%	390K 5%	680K 5%	680K 5%
3474	15K 5%	12K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	12K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%
3481	5R6 5%	5R6 5%	5R6 5%	5R6 5%	5R6 5%	4R7 5%	-	5R6 5%	-	5R6 5%	5R6 5%	4R7 5%	-	5R6 5%	4R7 5%	-	4R7 5%	-	-	-	-	-	-	-	-
3482	22K 1%	22K 1%	2K4 1%	22K 1%	22K 1%	22K 1%	-	22K 1%	-	22K 1%	-	22K 1%	-	22K 1%	-	-	22K 1%	-	-	-	-	-	-	-	-
3483	56K 1%	56K 1%	5K6 1%	56K 1%	56K 1%	56K 1%	-	56K 1%	-	56K 1%	-	56K 1%	-	56K 1%	-	-	56K 1%	-	-	-	-	-	-	-	-
3491	100K 5%	100K 5%	100K 5%	82K 5%	68K 5%	82K 5%	100K 5%	100K 5%	100K 5%	82K 5%	100K 5%	82K 5%	82K 5%	82K 5%	100K 5%	82K 5%	82K 5%	82K 5%	100K 5%	56K 5%	82K 5%	82K 5%	82K 5%	82K 5%	56K 5%
3494	180K 5%	-	100K 5%	150K 5%	680K 5%	680K 5%	-	180K 5%	-	180K 5%	-	680K 5%	-	-	-	680K 1%	-	-	-	-	-	-	-	-	-
3499	680K 5%	680K 5%	680K 5%	330K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%
5401	50uH	42uH	33uH	33uH	25uH	42uH	33uH	37uH	50uH	50uH	16uH	42uH	25uH	82uH	37uH	33uH	42uH	42uH	82uH	33uH	42uH	42uH	82uH	33uH	33uH
5408	-	SC2132 9-00B	CU15	CU15	CU15	SC2132 9-00B	CU15	-	SC2132 9-00B	SC2132 9-00B	SC2132 9-00B	SC2132 9-00B	CU15	-	CU15	CU15	SC2132 9-00B	CU15	CU15	-	CU15	CU15	-	CU15	CU15
5450	JF0501-21835B	JF0501-85021B	JF0501-21836B	JF0501-21140B	JF0101-85020B	JF0501-21835B	JF0501-21835B	JF0501-21135B	JF0501-21835B	JF0501-21835B	JF0501-21133B	JF0501-85021B	JF0101-85021B	JF0501-2136B	JF0501-2135B	JF0501-2136B	JF0501-2136B	JF0501-2136B	JF0501-2601B	JF0501-2135B	JF0501-2136B	JF0501-2601B	JF0501-2135B	JF0501-2136B	
5451	27uH 10%	JMP	33uH 10%	27uH 10%	JMP	33uH 10%	27uH 10%	27uH 10%	39uH 10%	JMP	JMP	27uH 10%	68uH 5%	27uH 10%	27uH 10%	0.58mm COL	22uH	27uH 10%	68uH 5%	27uH 10%	22uH	68uH 5%	27uH 10%	22uH 10%	22uH 10%
6404	DVM1500M	-	DVM1500M	DVM1500M	DVM1500M	-	DVM1500M	DVM1500M	DVM1500M	-	-	-	DMV1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M	DVM1500M
6411	-	BY229X-800	-	-	-	BY229X-800	-	-	BY229X-80	BY229X-800	-	-	-	-	-	-	BY229X-800	-	-	-	-	-	-	-	-
6412	-	BY359X-1500	-	-	-	BY359X-1500	-	-	BY359X-1500	BY359X-1500	-	-	-	-	-	-	BY359X-1500	-	-	-	-	-	-	-	-
7405	BU4508DX	BU2725DX	BU4508DX	BU2725DX	BU4508DX	BU2725DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU2725DX	BU2725DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX	BU4508DX
9407	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9417	-	JMP	-	-	-	JMP	-	-	-	JMP	JMP	JMP	-	-	-	-	-	-	-	-	-	-	-	-	-

Region	EUROPE							
Tube	LPD	LPD	LPD	LPD	LPD	LPD	LPD	LPD
Size	21RF	24 WR	25 I	28 I	29 RF	28 WR	28 WS	32 WR
2411	470pF	1n2	470pF	470pF	1nF	680pF	680pF	680pF
2412	8n2	13nF	9n1	13nF	13nF	11nF	11nF	11nF
2413	33nF	15nF	18nF	18nF	33nF	15nF	15nF	15nF
2416	-	2n2	-	-	-	4n7	2n2	4n7
2418	470nF	-	390nF	390nF	360nF	-	-	-
2419	2u2	470nF	470nF	470nF	2u2	430nF	470nF	430nF
2425	33nF	33nF	33nF	33nF	33nF	33nF	33nF	33nF
2451	220nF	220nF	220nF	220nF	220nF	220nF	220nF	220nF
2457	4u7	4u7	4u7	4u7	4u7	4u7	4u7	4u7
2487	1nF	1nF	1nF	1nF	1nF	1nF	1nF	1nF
2490	47n	-	-	-	-	-	-	-
3224	1M 5%	1M 5%	1M 5%	1M 5%	1M 5%	1M 5%	1M 5%	1M 5%
3295	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%	8K2 5%
3414	4R7 1W	4R7 1W	10R 1W 5%	10R 1W 5%	2R2 1W	3R3 1W	4R7 1W	3R3 1W
3431	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	82K 1%	68K 1%
3451	68K 1%	120K 5%	120K 5%	68K 1%	68K 1%	68K 1%	18K 5%	18K 5%
3452	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	18K 5%	220R 5%
3453	22K 5%	22K 5%	33K 5%	33K 5%	33K 5%	22K 5%	22K 5%	220R 5%
3467	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	1R5 1%
3468	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	220R 5%	6R8 1%
3471	3R3 1%	3R3 5%	1R5 1%	1R5 1%	2R2 1%	1R5 1%	3R3 1%	470K 5%
3472	3R3 1%	3R3 1%	2R2 1%	2R2 1%	2R2 1%	6R8 1%	3R3 1%	15K 5%
3473	470K 5%	470K 5%	680K 5%	680K 5%	680K 5%	470K 5%	470K 5%	-
3474	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	15K 5%	-
3481	-	-	-	-	-	-	-	-
3482	-	-	-	-	-	-	-	56K 5%
3483	-	-	-	-	-	-	-	56K 5%
3491	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	-
3494	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	56K 5%	680K 5%
3499	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%	680K 5%
5401	82uH	37uH	50uH	50uH	25uH	50uH	25uH	25uH
5408	CUI5	SC21329-00B	SC21329-00B	SC21329-00B	CUI5	SC21329-00B	SC21329-00B	SC21329-00B
5450	1342.0033CY	1342.0048B	1342.0048B	1342.0048B	1362.0016AB	1362.0015AB	1342.0042CY	1362.0015AB
5451	22uH 10%	22uH 10%	27uH 10%	27uH 10%	39uH 10%	0.588 COL	22uH 10%	33uH 10%
6404	DVM1500M	-	-	-	DVM1500M	-	-	-
6411	-	BY229X-800	BY229X-800	BY229X-800	-	BY229X-800	BY229X-800	BY229X-800
6412	-	BY359X-1500	BY359X-1500	BY359X-1500	-	BY359X-1500	BY359X-1500	BY359X-1500
7405	BU4508DX	BU2725DX	BU2725DX	BU2725DX	BU4508DX	BU2725DX	BU4508DX	BU2725DX
9407	JMP	-	-	-	JMP	-	-	JMP
9417	-	JMP	-	-	-	JMP	JMP	JMP

Mono Carrier: Tuner IF

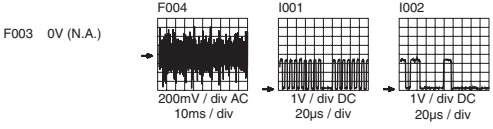
A3 TUNER IF

A3



ITEM	EU Normal	EU FM Radio	EU Splitter	NA/LA/AP NTSC	AP LNA	AP Splitter	CH LNA
1000	UV1316E/A I-4	UR1316/A I-3	TEDE9-703A	TEDH9-305A	UV1356A/A I G-3	TEDE9-703A	UV1356A/A I G-3
2002	50V 22P	50V 22P	50V 22P	---	50V 22P	50V 22P	50V 22P
2008	68u	68u	68u	100u	100u	68u	100u
2009	---	16V 100N	---	---	---	---	---
2013	---	25V 1N	---	---	---	---	---
2014	---	25V 1N	---	---	---	---	---
2016	---	25V 1N	---	---	---	---	---
3010	---	330R	---	---	---	---	---
3014	---	820R	---	---	---	---	---
3016	---	100K	---	---	---	---	---
3018	---	560R	---	---	---	---	---
3019	---	150K	---	---	---	---	---
5002	0U47	0U47	0U47	0U39	0U39	0U47	0U39
7003	---	BFS20	---	---	---	---	---

ITEM	EU-QSS	NA/LA/AP INT	AP QSS	CH QSS
1001	K9656M	---	K9362M	K9352M
1002	K3953M	M1971M	K7257M	---
1003	---	---	---	K6274M
2003	50V 10N	---	50V 10N	50V 10N
3002	10K	---	---	---
3006	10K	---	10K	10K
3007	2K2	---	2K2	2K2
3008	6K8	---	6K8	6K8
3009	2K2	---	2K2	2K2
4002	JMP	JMP	---	JMP
4003	---	JMP	---	---
4004	---	---	JMP	JMP
4006	---	JMP	JMP	JMP
4011	JMP	---	JMP	JMP
4012	---	---	JMP	JMP
6002	BAS316	---	---	---
6004	1SS356	---	1SS356	1SS356
7001	PDC124ET	---	PDC124ET	PDC124ET



Cell 11NC : 8239_125_0926
Function 11NC : 8239_125_0934

3139 123 5673.4

F_15760_013.eps
161105

A4 HERCULES

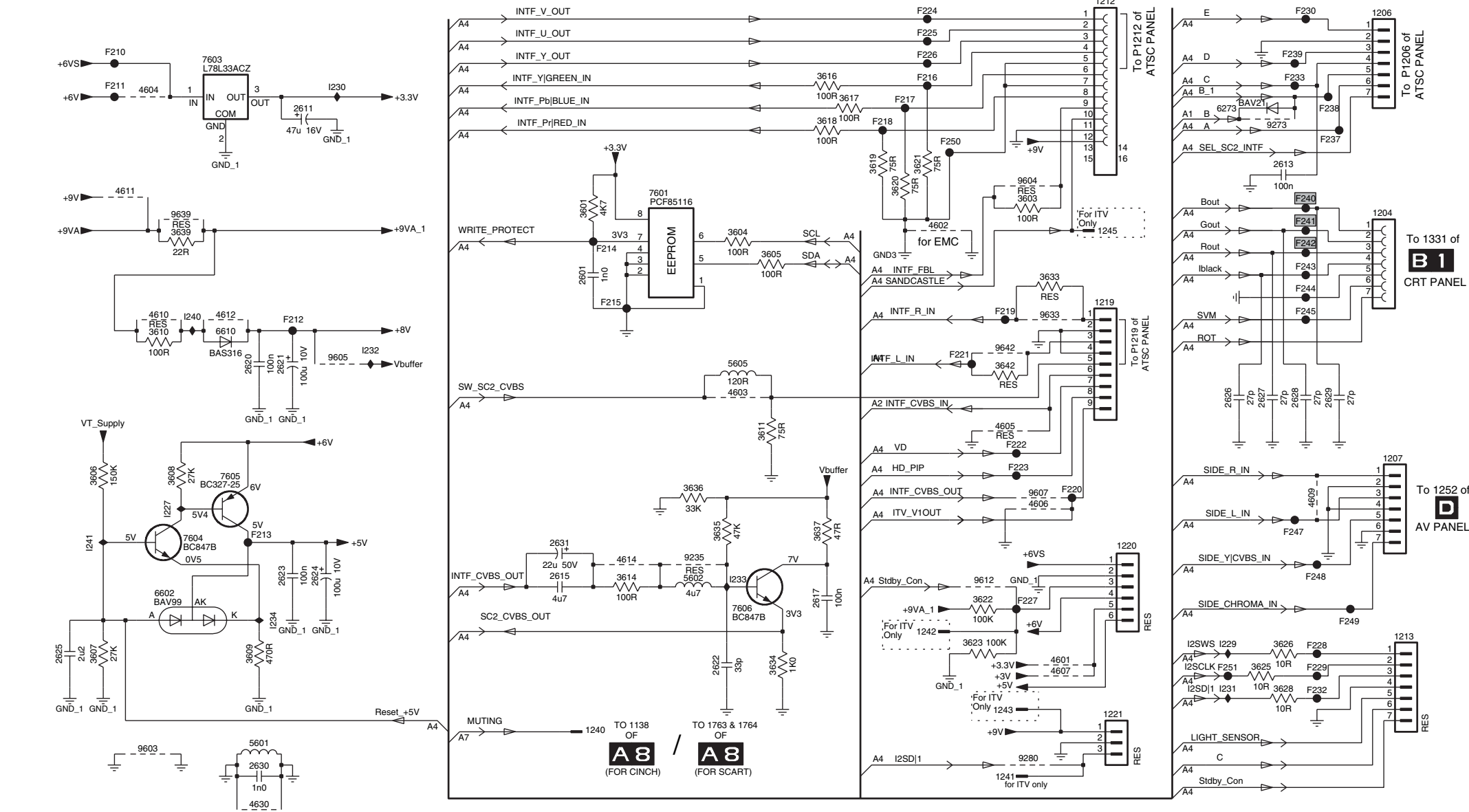


1205 E9	2290 F9	3291 B2	I211 E5
1208 B3	3200 B3	3292 A8	I212 F7
1230 B8	2011 B10	3293 A8	I213 F6
1234 B8	3202 B7	3294 A9	I214 E6
1235 A4	3203 E10	3295 G6	I215 F6
1682 B11	3204 B7	3296 F10	I216 B8
1683 G2	3205 D10	3297 G6	I217 A10
1684 F1	3206 F10	3298 B8	I218 C1
2203 F2	3207 B7	3299 B3	I219 B2
2204 E10	3208 E11	4207 B1	I222 C10
2205 D3	3209 E11	4209 G2	I224 F12
2206 F2	3210 E12	4210 H4	I225 F12
2207 H2	3211 E11	4211 B10	I226 F2
2208 H2	3212 B8	4212 H1	I228 B10
2209 C3	3213 B3	4213 A8	I235 C10
1210 D2	3214 B7	4214 A10	I236 C10
2211 E2	3215 B6	4215 B2	C200 F7
2212 E2	3216 B6	4219 B7	C201 H5
2213 E3	3217 D10	5201 F2	C202 H5
2214 E9	3218 B7	5202 C3	C203 H6
2215 D3	3219 B7	5203 D2	C204 H6
2216 E3	3220 E2	5205 D3	C205 H5
2217 E10	3221 F2	5206 E3	C206 H6
2218 F7	3222 A4	5207 D3	C207 H6
2221 A6	3223 B6	5208 C3	C208 H7
2222 B8	3224 G6	5209 C3	C209 H7
2223 F7	3225 F9	5210 D2	C210 H5
2224 D2	3226 B5	5211 E1	C211 H6
2225 E3	3227 C5	5212 C2	
2226 F9	3228 B5	5213 G8	
2227 F10	3229 E3	5214 E10	
2229 G7	3230 F7	5215 E2	
2230 F5	3231 F6	5216 E2	
2231 F3	3232 F6	5217 B5	
2232 F3	3233 B10	5218 H4	
2233 C3	3234 A10	5219 E9	
2234 C3	3235 A9	5295 F2	
2235 F6	3236 B5	6201 E11	
2236 G6	3237 A8	6202 B10	
2237 F3	3238 B2	6203 E2	
2238 C3	3239 B2	6204 D1	
2239 F6	3240 B2	6205 B10	
2240 G6	3241 F7	6207 E10	
2241 F6	3242 B9	6208 G7	
2242 F8	3243 G6	6209 A7	
2243 F8	3244 G6	6210 B7	
2244 F5	3245 B9	6211 B7	
2245 B9	3246 A9	7200 D6	
2246 F8	3247 F6	7201-1 E10	
2247 F8	3248 B4	7201-2 E11	
2248 B8	3249 B3	7202 D10	
2249 D2	3250 B2	7203 E11	
2250 D2	3251 G6	7204 E11	
2251 F8	3252 B8	7205 B9	
2252 B8	3253 C6	7207 B1	
2253 B4	3254 E2	7208 A8	
2254 F6	3255 A4	7209 F10	
2255 G4	3256 B4	7210 F11	
2256 F5	3257 B4	9201 B5	
2257 B8	3258 B3	9202 H3	
2258 F9	3259 B9	9203 H4	
2259 B9	3260 B6	9204 B6	
2260 G5	3261 B6	9205 H3	
2261 F5	3262 C10	9211 A3	
2262 F3	3263 C10	9212 B3	
2263 F6	3264 C10	9215 G5	
2264 F3	3265 D10	9257 G4	
2265 C2	3266 D10	9260 B5	
2266 F7	3267 B5	9261 G3	
2267 E4	3268 B5	9262 G5	
2268 F9	3269 B6	9265 G3	
2269 F9	3270 G3	9266 G3	
2270 B4	3271 A8	F200 E11	
2271 B5	3272 B2	F201 D3	
2272 E2	3273 B1	F202 C9	
2273 E1	3274 G5	F203 F2	
2274 F6	3275 G5	F204 F7	
2275 F6	3276 G3	F205 B6	
2276 C2	3277 G3	F206 B2	
2277 D11	3278 G3	F207 D3	
2278 F8	3279 C10	F208 B2	
2279 B6	3280 C10	F209 F12	
2280 B6	3281 B10	F270 C10	
2281 F2	3282 C10	I201 E11	
2282 C9	3283 C10	I203 E8	
2283 G5	3284 B7	I204 F10	
2284 F4	3285 D10	I205 G6	
2285 G5	3286 B3	I206 G6	
2286 F3	3287 B9	I207 A8	
2287 G5	3288 G2	I208 A9	
2288 A3	3289 C5	I209 B10	
2289 B4	3290 A10	I210 C3	

Mono Carrier: Features & Connectivity

A5 FEATURES & CONNECTIVITIES

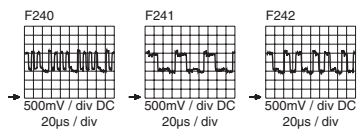
A5



1213	MTV	ITV
1	I2SWS	ITV DATA OUT/SDA
2	I2SCLK	ITV DATAIN
3	I2SDI1	ITV CLOCK
4	GND	GND
5	Light sensor	ITV SCL
6	C	ITV POR 1
7	Stdb-con	Stdb-con

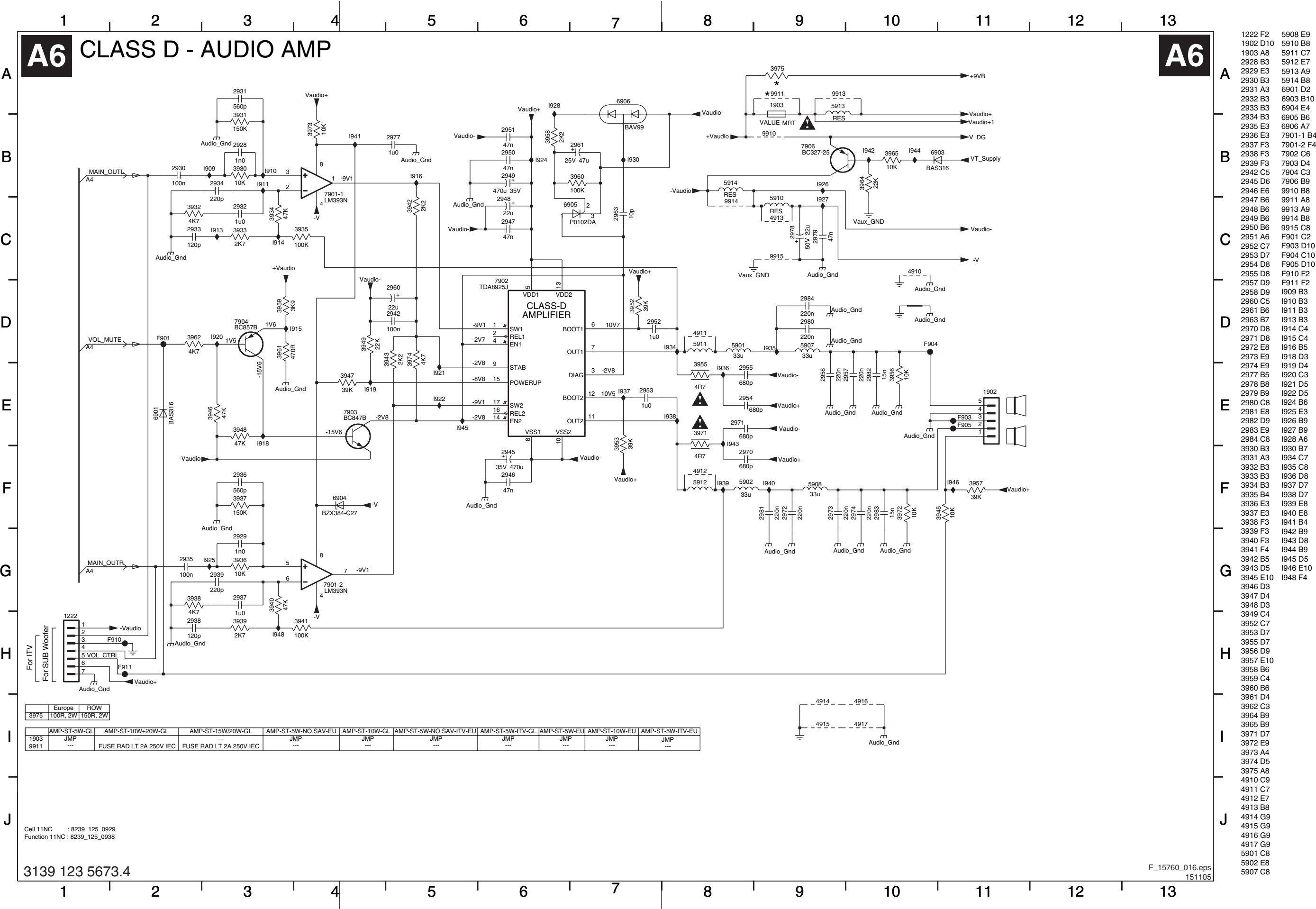
1206	DVD	iDTV	USB	PCMCIA	ATSC
A	-	-	-	-	-
B	Power On	Power On	Power On	Power On	Power On
C	Bus Request	Bus Request	Bus Request	Bus Request	Reset #
D	Rx	-	Rx	Rx	Rx
E	Tx	-	Tx	Tx	Tx

1212	ATSC
1	-
2	-
3	-
4	-
5	GND
6	Y
7	U
8	V
9	-
10	-
11	-
12	-



- 1204 C10
- 1206 A10
- 1207 D10
- 1212 A9
- 1213 E11
- 1219 C9
- 1220 E9
- 1221 F9
- 1240 F5
- 1241 F8
- 1242 E7
- 1243 F8
- 1245 C9
- 2601 C5
- 2611 B3
- 2613 B10
- 2615 E5
- 2617 E7
- 2620 D3
- 2621 D3
- 2622 E6
- 2623 E3
- 2624 E4
- 2625 E2
- 2626 D9
- 2627 D10
- 2628 D10
- 2629 D10
- 2630 F3
- 2631 E5
- 3601 C5
- 3603 B8
- 3604 C6
- 3605 C6
- 3606 D2
- 3607 E2
- 3608 D3
- 3609 E3
- 3610 C3
- 3611 D6
- 3614 E6
- 3616 B7
- 3617 B7
- 3619 B7
- 3620 B7
- 3621 B7
- 3622 E8
- 3623 E8
- 3625 E10
- 3626 E10
- 3628 F10
- 3633 C8
- 3634 E6
- 3635 E6
- 3636 D6
- 3637 E7
- 3639 C3
- 3642 D8
- 4601 E8
- 4602 C8
- 4603 D6
- 4604 B2
- 4605 D8
- 4606 D8
- 4607 F8
- 4609 D10
- 4610 C3
- 4611 B2
- 4612 C3
- 4614 E6
- 4630 F3
- 5601 F3
- 5602 E6
- 5605 D6
- 6273 B9
- 6602 E3
- 6610 C3
- 7601 B6
- 7603 B3
- 7604 E3
- 7605 D3
- 7606 E6
- 9235 E6
- 9273 B10
- 9280 F8
- 9603 F2
- 9604 B8
- 9605 D4
- 9607 D8
- 9612 E8
- 9633 C8
- 9639 C3
- 9642 C8
- F210 B2
- F211 B2
- F212 C3
- F213 E3
- F214 C5
- F215 C5
- F216 B7
- F217 B7
- F218 B7
- F219 C8
- F220 D8
- F221 C8
- F222 D8
- F223 D8
- F224 A7
- F225 A7
- F226 B7
- F227 E8
- F228 E10
- F229 E10
- F230 A10
- F232 F10
- F233 B10
- F237 B10
- F238 B10
- F240 B10
- F241 C10
- F242 C10
- F243 C10
- F244 C10
- F245 C10
- F247 E10
- F248 E10
- F249 E10
- F250 B8
- F251 E9
- I227 D3
- I229 E9
- I230 B4
- I231 F9
- I232 C4
- I233 E6
- I234 E3
- I240 C3
- I241 E2

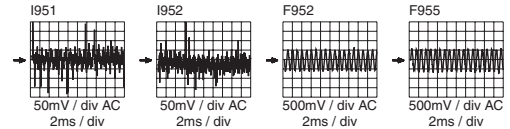
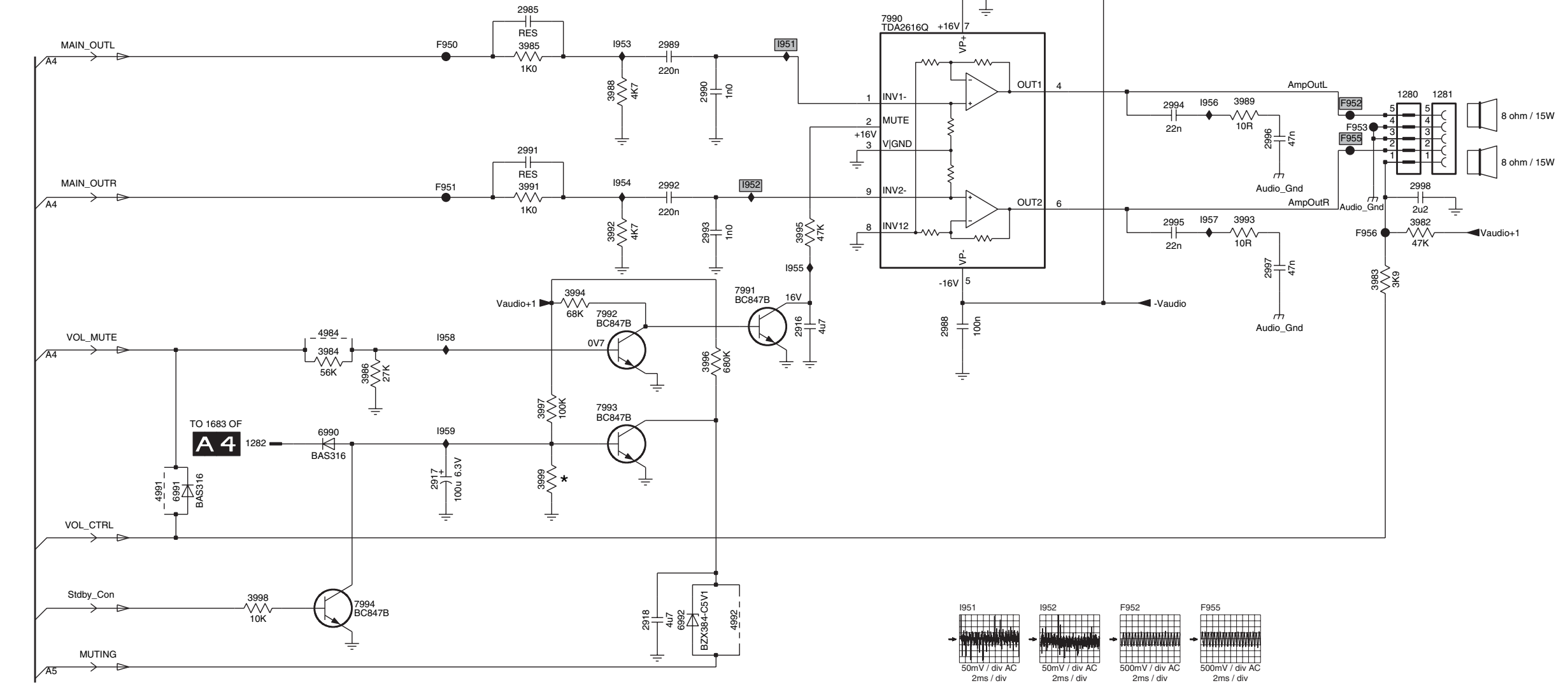
Mono Carrier: Class D - Audio Amplifier



Mono Carrier: Audio Amplifier

A7 AUDIO AMPLIFIER

A7



3139 123 5673.4

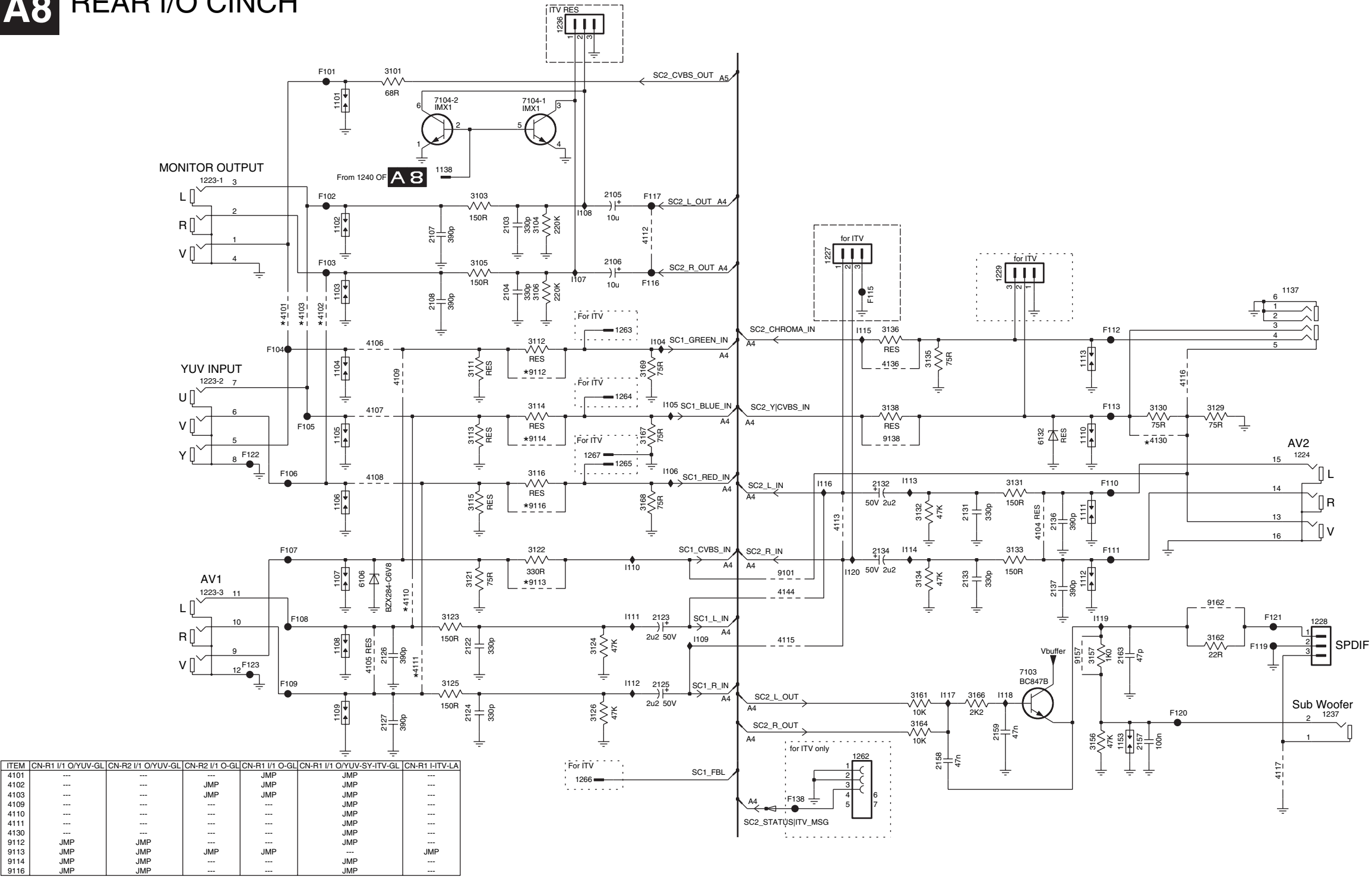
F_15760_017.eps
181105

- 1280 B9
- 1281 B9
- 1282 D2
- 2916 C5
- 2917 D3
- 2918 E4
- 2985 A3
- 2986 A7
- 2987 A6
- 2988 C6
- 2989 A4
- 2990 B5
- 2991 B3
- 2992 B4
- 2993 B5
- 2994 B7
- 2995 B7
- 2996 B8
- 2997 C8
- 2998 B9
- 3982 B9
- 3983 C9
- 3984 C2
- 3985 A3
- 3986 C2
- 3988 B4
- 3989 B8
- 3991 B3
- 3992 B4
- 3993 B8
- 3994 C4
- 3995 B5
- 3996 C5
- 3997 D4
- 3998 E2
- 3999 D4
- 4984 C2
- 4991 D1
- 4992 E5
- 6990 D2
- 6991 D1
- 6992 E4
- 7990 A6
- 7991 C5
- 7992 C4
- 7993 D4
- 7994 E2
- F950 A3
- F951 B3
- F952 B8
- F953 B9
- F955 B8
- F956 C9
- I951 A5
- I952 B5
- I953 A4
- I954 B4
- I955 C5
- I956 B8
- I957 B8
- I958 C3
- I959 D3

Mono Carrier: Rear I/O Cinch

A8 REAR I/O CINCH

A8



ITEM	CN-R1 I/1 O/YUV-GL	CN-R2 I/1 O/YUV-GL	CN-R2 I/1 O-GL	CN-R1 I/1 O-GL	CN-R1 I/1 O/YUV-SY-ITV-GL	CN-R1 I-ITV-LA
4101	---	---	---	JMP	JMP	---
4102	---	---	---	JMP	JMP	---
4103	---	---	JMP	JMP	JMP	---
4109	---	---	---	---	JMP	---
4110	---	---	---	---	JMP	---
4111	---	---	---	---	JMP	---
4130	---	---	---	---	JMP	---
9112	JMP	JMP	---	---	JMP	JMP
9113	JMP	JMP	JMP	JMP	---	---
9114	JMP	JMP	---	---	JMP	---
9116	JMP	JMP	---	---	JMP	---

CELL 11NC : 8239_125_0928
FUNCTION 11NC : 8239_125_0937

3139 123 5673.4

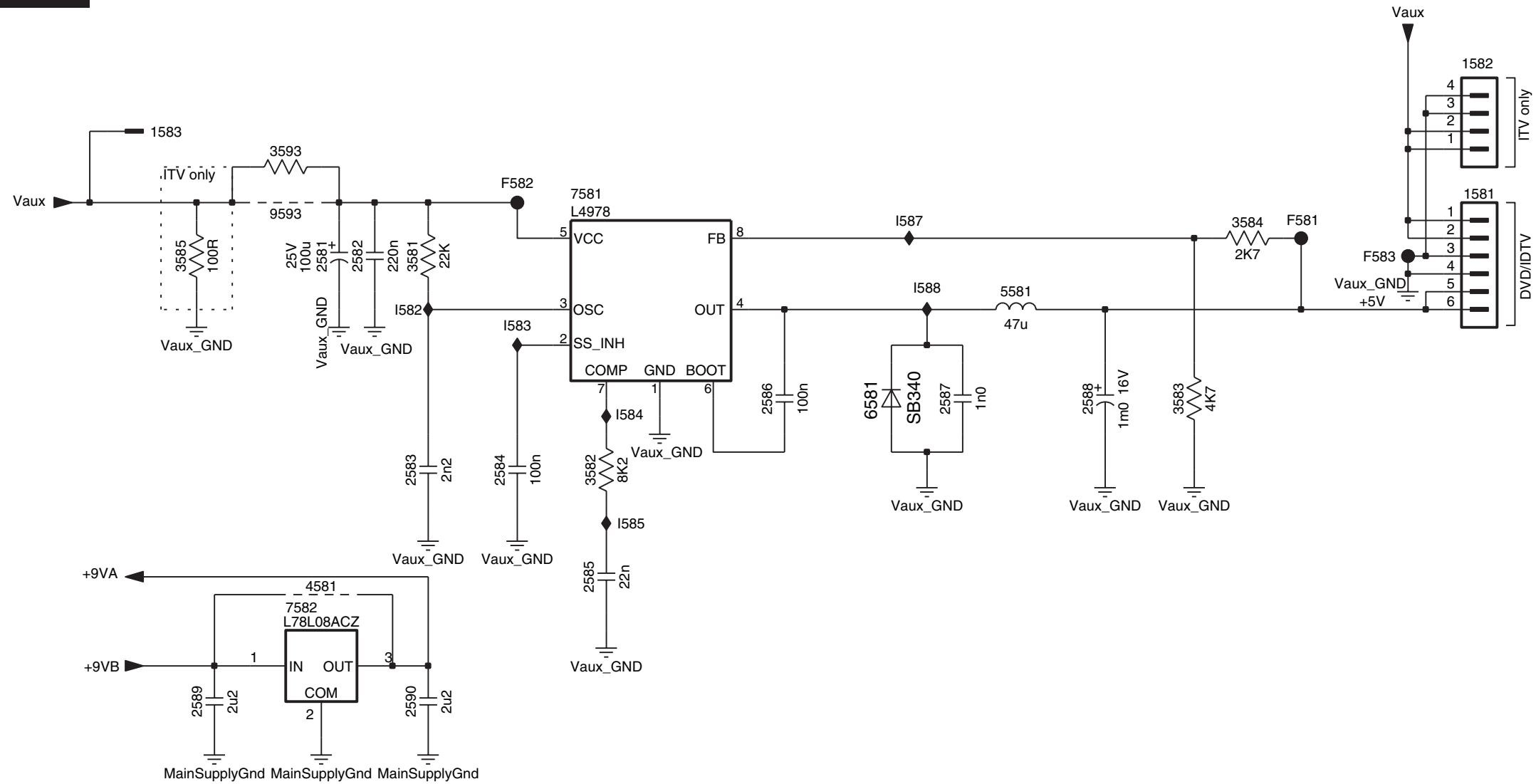
F_15760_018.eps
161105

- 1101 A4
- 1102 B4
- 1103 C4
- 1104 C4
- 1105 D4
- 1106 D4
- 1107 E4
- 1108 F4
- 1109 F4
- 1110 D9
- 1111 E9
- 1112 E9
- 1113 C9
- 1137 C1
- 1138 B5
- 1153 F0
- 1223-1 B3
- 1223-2 D3
- 1223-3 E3
- 1227 C7
- 1228 E1
- 1229 C9
- 1236 A5
- 1237 F1
- 1262 F8
- 1263 C6
- 1264 D6
- 1265 D6
- 1266 G6
- 1267 D6
- 2103 B5
- 2104 C5
- 2105 B6
- 2106 C6
- 2107 B4
- 2108 C4
- 2122 F5
- 2123 E6
- 2124 F5
- 2125 F6
- 2126 F4
- 2127 F4
- 2131 E8
- 2132 D8
- 2133 E8
- 2134 E8
- 2136 E9
- 2137 E9
- 2157 F0
- 2158 F8
- 2159 F9
- 2163 F0
- 3101 A4
- 3103 B5
- 3104 B5
- 3105 C5
- 3106 C5
- 3111 C5
- 3112 C5
- 3113 D5
- 3114 D5
- 3115 D5
- 3116 D5
- 3121 E5
- 3122 E5
- 3123 E5
- 3124 F6
- 3125 F5
- 3126 F6
- 3129 D0
- 3130 D0
- 3131 D9
- 3132 E8
- 3133 E9
- 3134 E8
- 3135 C8
- 3136 C8
- 3138 D8
- 3156 F9
- 3157 F9
- 3161 F8
- 3162 E0
- 3164 F8
- 3166 F8
- 3167 D6
- 3168 D6
- 3169 C6
- 4101 C3
- 4102 C4
- 4103 C3
- 4104 E9
- 4105 F4
- 4106 C4
- 4107 D4
- 4108 D4
- 4109 D4
- 4110 E4
- 4111 F4
- 4112 B6
- 4113 E7
- 4115 F7
- 4116 D10
- 4117 F1
- 4130 D10
- 4136 C8
- 4144 E7
- 6106 E4
- 6132 D9
- 7103 F9
- 7104-1 A5
- 9101 E7
- 9112 D5
- 9113 E5
- 9114 D5
- 9116 E5
- 9138 D8
- 9157 F9
- 9162 E0
- F101 A4
- F102 B4
- F103 C4
- F104 C3
- F105 D3
- F106 D3
- F107 E3
- F108 E3
- F109 F3
- F110 D9
- F111 E9
- F112 C9
- F113 D9
- F115 C8
- F116 C6
- F117 B6
- F119 F11
- F120 F10
- F121 E11
- F122 D3
- F123 F3
- F138 G7
- I104 C6
- I105 D6
- I106 D6
- I107 C5
- I108 B6
- I109 E6
- I110 E6
- I111 E6
- I112 F6
- I113 D8
- I114 E8
- I115 C8
- I116 D7
- I117 F8
- I118 F9
- I119 E9
- I120 E8

Mono Carrier: DVD PSU (optional)

A10 DVD POWER SUPPLY (OPTIONAL)

A10

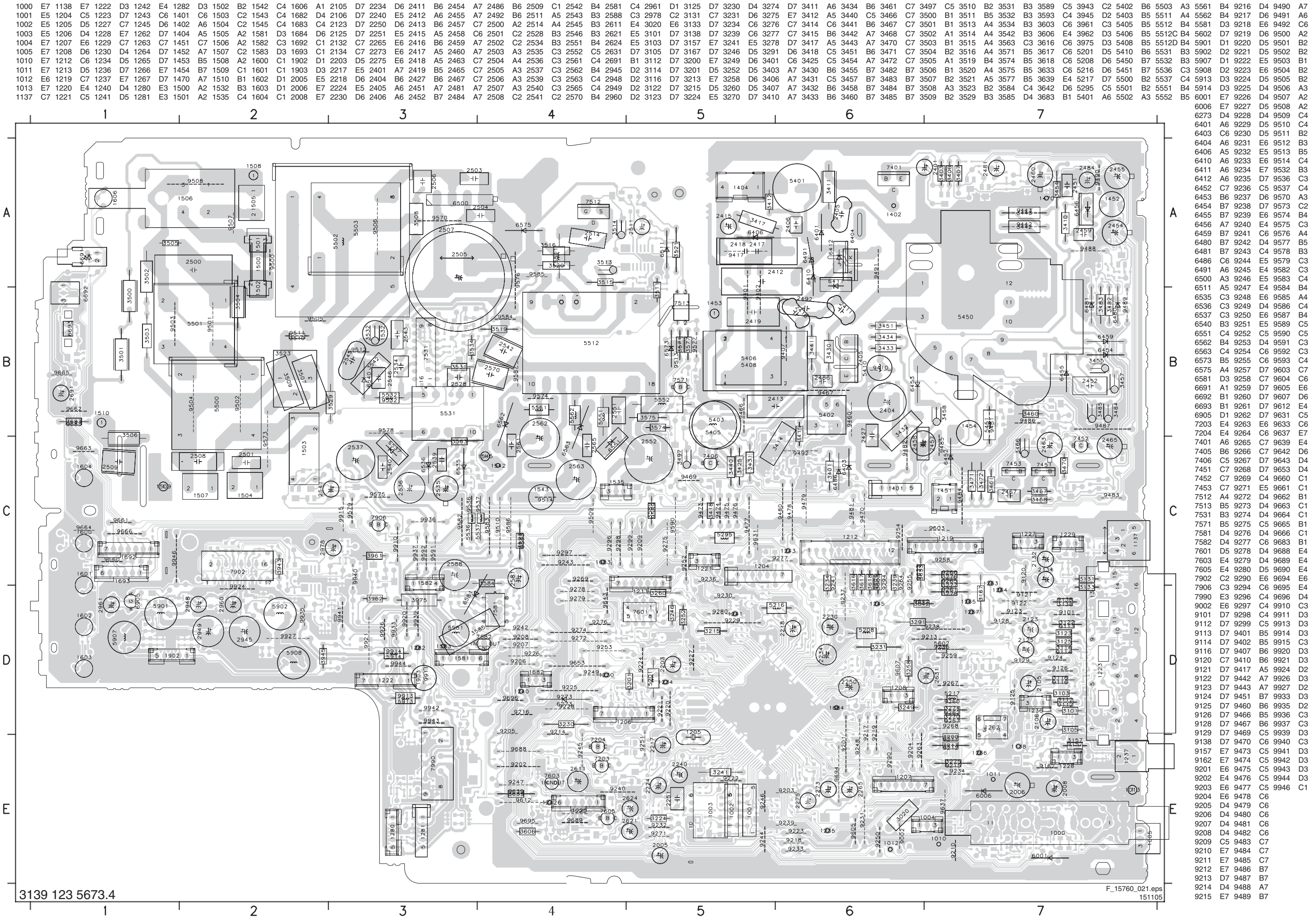


- 1581 A7
- 1582 A7
- 1583 A1
- 2581 A2
- 2582 A2
- 2583 B2
- 2584 B3
- 2585 C3
- 2586 B4
- 2587 B4
- 2588 B5
- 2589 C1
- 2590 C2
- 3581 A2
- 3582 B3
- 3583 B5
- 3584 A6
- 3585 A1
- 3593 A2
- 4581 C2
- 5581 B5
- 6581 B4
- 7581 A3
- 7582 C2
- 9593 A2
- F581 A6
- F582 A3
- F583 A6
- I582 B2
- I583 B3
- I584 B3
- I585 B3
- I587 A4
- I588 B4

3139 123 5673.4

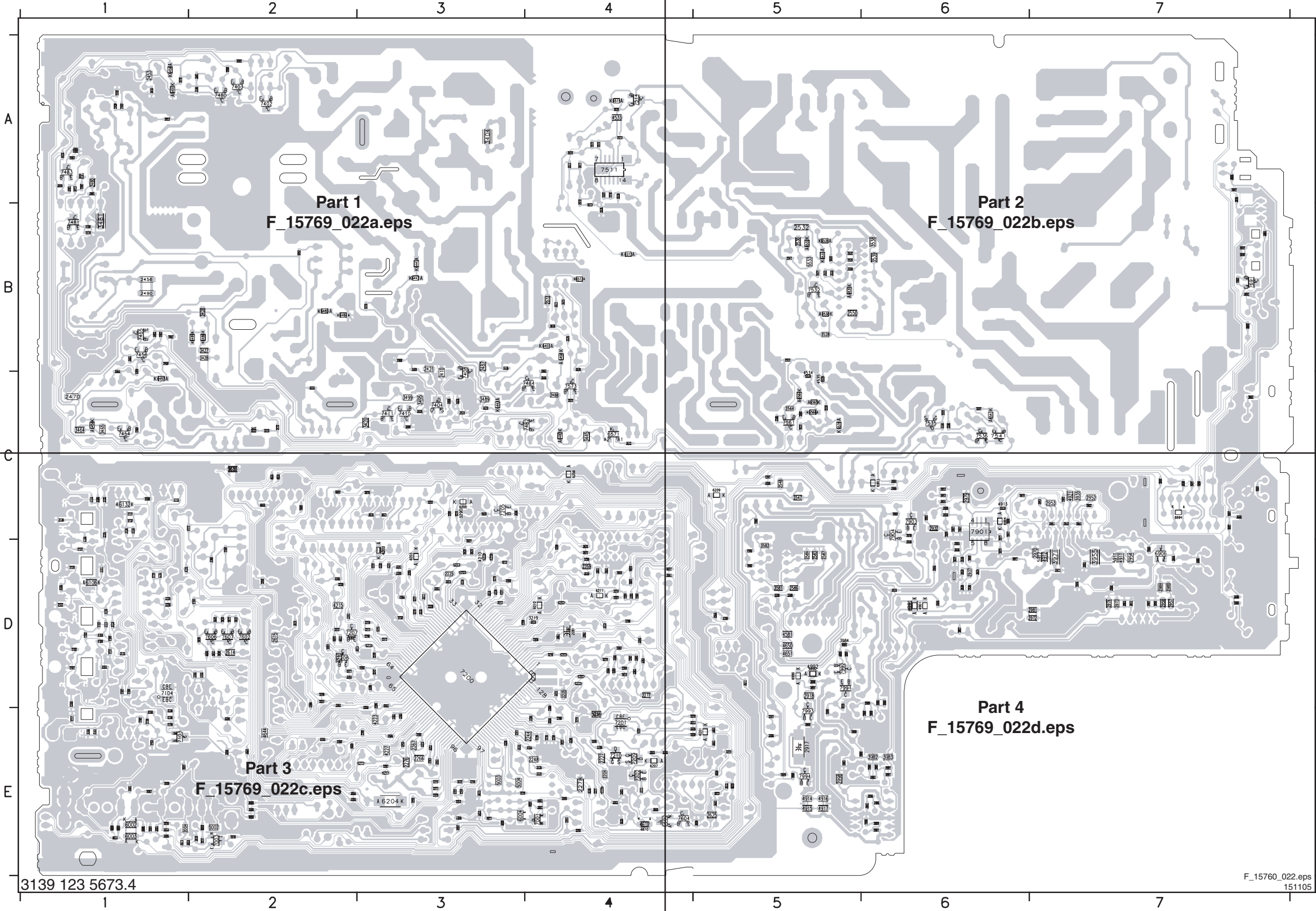
F_15760_020.eps
161105

Layout Mono Carrier: (Top Side)



Layout Mono Carrier (Overview Bottom Side)

2001	E1	2107	D1	2158	E1	2212	D4	2229	D3	2243	D3	2256	D3	2268	E4	2281	D4	2403	A1	2461	B1	2489	B3	2531	B5	2566	C5	2590	D5	2627	D3	2931	C6	2947	C7	2971	D7	2985	D6	2996	E6	3008	E2	3115	D1	3161	D1	3207	D4	3220	D3	3235	E4	3250	D2	3264	D4	3281	D4	3293	D2	3694	A7	4437	C2	6451	A1
2002	E1	2108	D1	2159	E1	2213	D3	2231	D3	2244	E4	2257	E3	2269	E4	2282	D4	2408	C3	2462	B1	2490	B1	2532	B5	2571	B4	2601	D4	2628	D3	2932	C6	2950	D7	2972	D7	2986	E5	2997	E6	3009	E3	3121	D1	3162	E1	3208	E4	3221	D3	3236	E4	3251	E3	3265	D4	3282	D4	3294	C3	3695	B7	4470	A1	6457	C1
2003	E2	2122	D1	2163	E1	2214	E4	2232	D3	2245	E4	2258	D3	2270	E3	2283	E3	2409	B3	2464	C1	2491	A1	2533	B5	2572	C4	2613	D4	2629	D3	2933	C6	2951	C7	2973	D7	2987	E5	2998	E5	3010	E2	3124	D1	3164	D1	3209	E4	3222	E3	3237	E4	3253	E3	3266	D4	3283	D4	3295	E4	3696	B7	4474	C3	6458	C1
2004	E1	2124	D1	2204	E4	2215	D3	2233	D3	2246	D3	2259	D4	2271	E3	2284	E3	2410	C3	2468	C1	2512	A4	2538	C5	2573	B4	2614	D2	2630	C2	2934	C6	2952	C7	2974	D7	2988	E5	3000	E1	3014	E1	3126	D1	3166	E1	3210	E4	3223	E5	3238	D2	3254	E3	3267	E3	3284	D4	3296	E4	3697	B7	4477	A1	6482	C4
2007	E1	2126	D1	2205	D4	2216	D3	2235	E4	2247	D2	2260	E2	2272	E3	2285	E3	2414	C3	2469	B1	2513	A4	2544	B5	2582	C5	2615	D2	2692	B7	2935	D6	2953	C7	2977	C6	2989	D6	3001	E1	3016	E1	3129	C1	3168	D2	3211	E4	3225	D3	3240	D2	3255	E2	3268	D2	3285	E4	3297	E3	3698	C7	4492	A1	6483	B2
2009	E1	2127	D1	2206	D4	2221	E4	2236	E4	2248	E4	2261	E3	2274	E3	2286	D3	2420	C3	2470	C1	2515	B4	2547	C5	2583	D5	2617	D2	2916	D5	2936	D6	2954	D7	2979	C6	2990	E6	3002	E1	3018	E1	3130	C1	3169	D2	3212	D4	3226	D3	3242	D3	3256	E2	3269	D4	3286	E2	3298	D4	3930	C6	4493	C2	6484	B2
2013	E1	2131	C1	2207	E5	2222	E3	2237	D3	2249	D3	2262	D2	2276	E3	2287	D3	2421	B3	2480	A1	2516	A4	2548	C5	2584	D5	2620	E4	2917	E5	2937	D6	2955	D7	2980	D7	2991	E6	3003	E1	3019	E2	3132	C1	3202	D4	3214	D4	3227	D3	3243	E4	3257	D2	3271	D2	3287	D4	3299	E2	3931	C6	4533	A4	6488	B2
2014	E2	2133	C1	2208	E5	2223	D3	2238	E4	2252	D3	2263	E3	2277	D4	2288	D5	2425	C3	2482	B4	2517	A4	2549	B5	2585	D5	2622	D2	2918	D5	2938	D6	2957	D7	2981	D7	2992	E6	3004	E1	3104	D2	3134	C1	3203	E4	3216	D3	3228	D3	3244	E3	3259	D4	3272	D2	3288	D4	3404	A3	3932	C6	4534	C5	6489	B2
2016	E2	2136	C1	2209	D3	2225	D3	2239	E4	2253	E3	2264	D3	2278	E4	2289	D5	2428	B2	2483	A1	2518	A4	2550	B5	2586	D5	2623	E4	2928	C6	2939	D6	2958	D7	2982	D7	2993	E6	3005	E1	3106	E1	3135	C1	3204	E4	3217	E4	3229	D3	3245	C3	3261	D4	3273	D3	3289	D3	3405	A2	3933	C6	4535	C5	6512	B4
2103	D2	2137	D1	2210	D4	2226	E4	2241	E3	2254	E3	2266	E3	2279	D3	2290	E4	2453	A1	2487	B3	2519	A4	2553	B5	2587	D5	2625	E5	2929	D6	2942	C7	2963	D7	2983	D7	2994	E6	3006	E4	3111	D1	3136	C1	3205	E4	3218	D3	3232	E4	3247	E3	3262	D4	3279	D4	3290	C3	3409	A1	3934	C6	4536	C6	6514	A4
2104	E1	2157	E1	2211	D3	2227	E4	2242	D3	2255	E2	2267	E3	2280	D3	2402	A1	2456	B1	2488	C4	2530	B5	2564	C5	2589	D5	2626	C3	2930	D6	2946	D7	2970	D7	2984	D7	2995	E6	3007	E4	3113	D1	3156	E1	3206	E4	3219	D4	3233	C3	3248	D2	3263	D4	3280	D4	3292	D2	3416	B3	3935	C7	4537	C5	6531	B5



3420	C3	3936	D6	4581	D5	6532	B5
3427	B2	3937	D6	4601	E5	6533	B5
3428	B2	3938	D6	4602	C2	6534	B5
3436	B3	3939	D6	4604	E5	6538	B5
3437	C2	3940	D6	4605	C2	6541	C6
3445	C4	3941	D6	4606	C2	6564	C5
3446	C4	3942	C7	4607	E5	6565	C5
3452	B2	3946	D6	4609	E2	6566	C5
3453	A1	3947	C6	4610	E5	6571	C4
3462	B1	3948	C6	4611	D5	6572	B4
3463	B1	3949	C6	4612	E4	6576	C5
3464	C1	3952	C7	4620	C2	6602	E4
3465	C1	3953	C7	4630	C2	6610	E4
3469	C1	3955	D7	4631	D4	6694	C7
3473	A1	3956	D7	4635	C2	6901	D6
3474	C2	3957	D6	4637	D2	6903	C6
3475	C2	3958	D7	4642	E2	6904	C6
3476	A1	3959	C6	4644	E2	6906	D7
3477	A1	3960	D7	4645	D2	6990	D5
3478	B1	3964	C6	4646	D4	6991	D6
3480	A2	3965	C6	4648	D2	6992	D5
3481	B1	3971	D7	4649	E5	7001	E4
3486	B1	3972	D7	4650	D5	7003	E2
3487	A2	3973	D6	4651	D5	7103	E1
3488	A2	3974	C6	4691	C7	7104	D1
3489	C3	3982	E6	4692	B7	7200	D3
3490	A1	3983	E6	4693	B7	7201	E4
3491	A1	3984	D5	4694	C7	7202	E4
3492	A1	3985	D6	4695	A7	7205	C3
3493	A1	3986	D5	4696	C7	7207	D2
3494	A1	3988	E6	4910	D6	7208	D2
3495	C3	3989	E6	4911	D7	7209	E4
3498	C3	3991	E6	4912	D7	7210	E4
3499	C3	3992	E6	4913	C6	7402	A2
3512	A4	3993	E6	4914	E5	7403	A2
3517	A4	3994	D5	4915	E5	7404	C3
3518	A4	3995	E5	4916	E5	7408	C3
3522	A4	3996	D5	4917	E5	7410	C3
3524	A4	3997	D5	4921	C7	7411	C3
3527	B5	3998	E5	4984	D5	7454	C1
3528	B5	3999	E5	4991	D6	7455	B1
3530	B5	4000	E1	4992	D5	7456	B1
3533	B5	4001	E1	5001	E2	7480	A2
3535	C6	4002	E4	5002	E2	7481	B1
3536	C6	4003	E2	5003	E3	7482	C4
3537	B5	4004	E4	5004	E3	7483	A1
3538	B6	4005	E2	5202	D4	7484	C4
3539	B6	4006	E1	5203	D4	7511	A4
3541	C6	4010	E2	5205	D3	7514	A4
3565	C5	4011	E3	5206	D3	7532	B5
3572	C4	4012	E3	5207	D4	7535	C6
3573	B4	4013	E3	5209	E4	7536	C6
3576	B4	4015	E1	5210	D3	7541	C6
3578	B4	4101	D1	5211	E3	7561	C5
3579	B4	4102	D1	5212	E3	7573	C4
3581	D5	4103	D1	5213	D3	7602	D2
3582	D5	4104	C1	5214	E4	7604	E4
3583	D5	4105	D1	5215	D4	7606	D2
3601	D4	4106	D1	5218	D3	7607	D2
3604	D4	4107	D1	5219	E4	7691	B7
3605	D4	4108	D1	5513	B4	7901	C6
3607	E5	4109	D1	5533	B5	7903	C6
3608	E4	4110	D1	5534	C5	7904	C6
3609	E5	4111	D1	5535	C5	7991	D5
3610	E5	4112	C1	5601	C2	7992	D5
3614	D2	4113	C1	5910	C6	7993	E5
3619	C3	4115	D1	5911	D7	7994	E5
3620	C3	4116	C1	5912	D7		
3621	C3	4117	E1	6002	E1		
3622	E5	4130	C1	6003	E1		
3623	E5	4136	C1	6004	E3		
3625	D4	4144	D2	6106	D1		
3626	D4	4207	D2	6132	C1		
3628	D4	4209	E3	6201	E5		
3631	D2	4210	D3	6202	D3		
3634	D2	4211	D3	6203	D3		
3635	D2	4212	D3	6204	E3		
3636	D2	4213	D2	6205	C3		
3637	D2	4214	C3	6207	E4		
3681	C7	4215	D2	6208	C4		
3684	C7	4219	D4	6209	C5		
3685	D7	4221	D3	6210	D4		
3686	D7	4222	E4	6211	D4		
3687	C7	4223	E3	6407	B4		
3689	C7	4224	E3	6408	B4		
3690	C7	4226	E3	6441	B3		
3691	A7	4227	E3	6442	B3		
3692	A7	4240	C5	6443	C3		
3693	B7	4241	C5	6450	A1		

3139 123 5673.4

F_15760_022.eps
151105

4

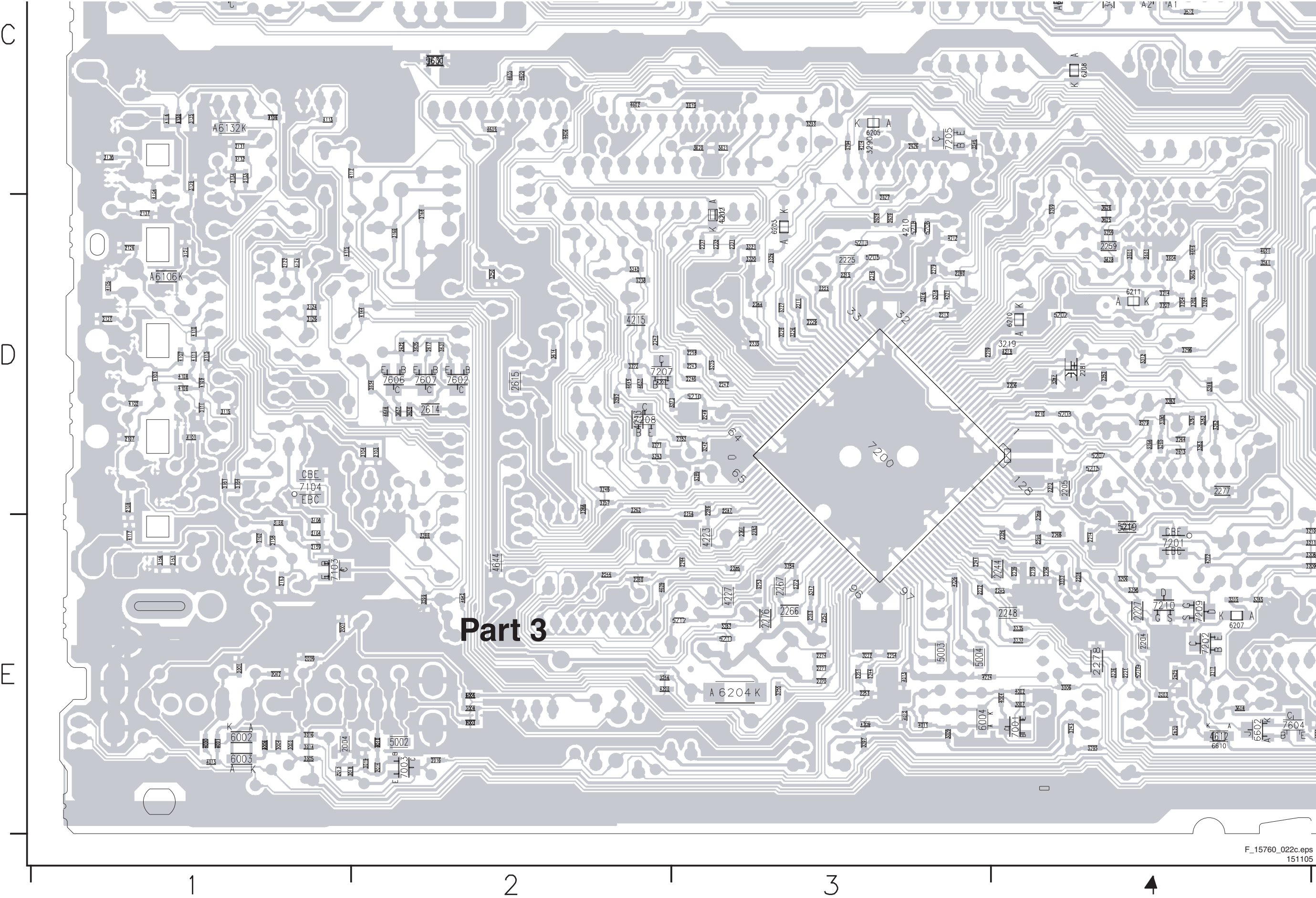
C

Part 1

7



Layout Mono Carrier (Part 3 Bottom Side)



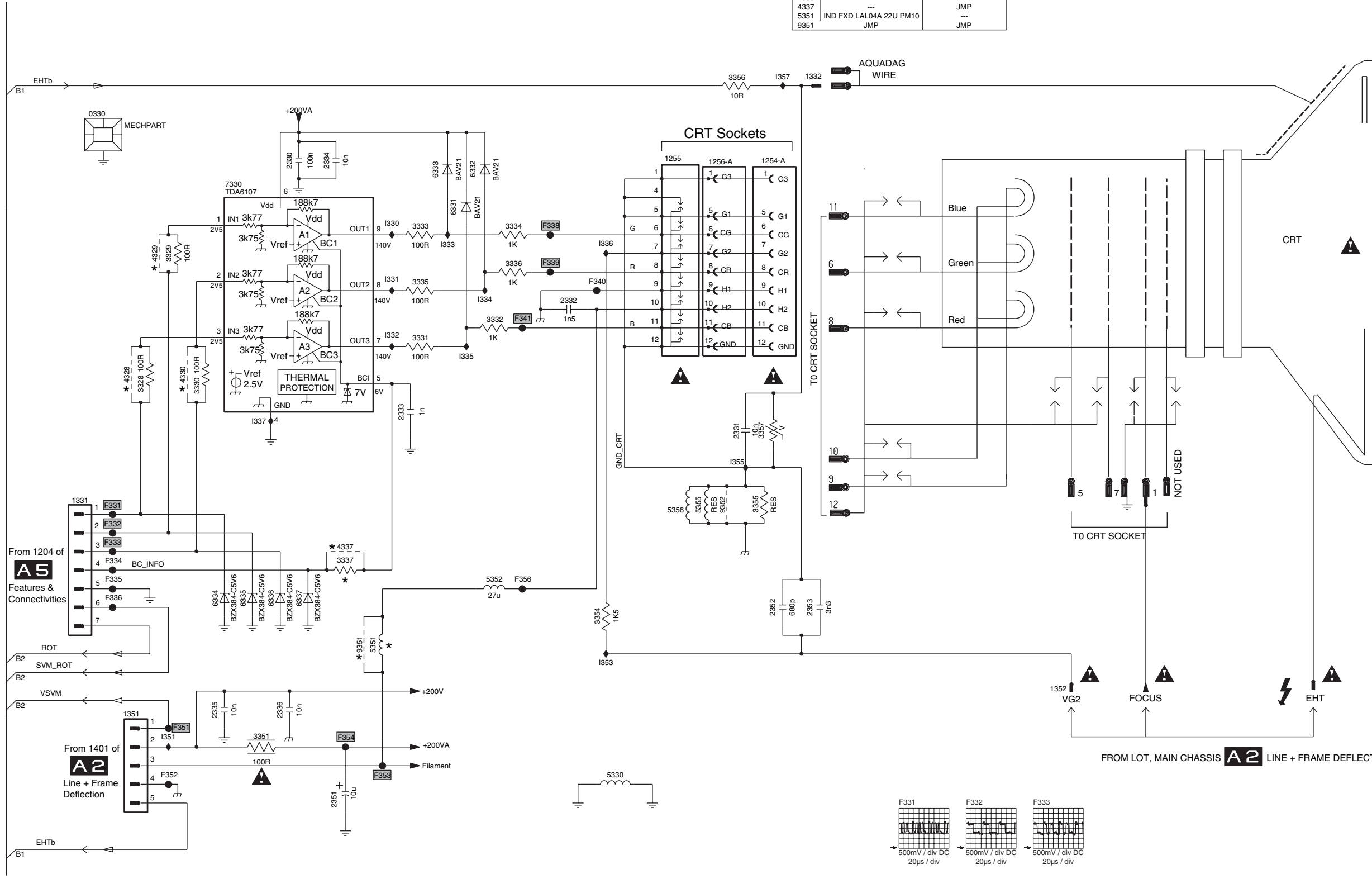
Part 4

CRT Panel

B1 CRT PANEL

B1

ITEM	ROW	
	THE REST	RGB+DISPL-29FS_IN
3328	100R	100R
3329	100R	100R
3330	100R	100R
3337	---	---
4328	---	---
4329	---	---
4330	---	---
4337	---	JMP
5351	IND FXD LAL04A 22U PM10	---
9351	JMP	JMP



- 0330 B2
- 1254-A B7
- 1255 B6
- 1256-A B7
- 1331 E2
- 1332 B8
- 1351 G2
- 1352 G9
- 2330 B3
- 2331 E7
- 2332 D6
- 2333 D4
- 2334 B4
- 2335 G3
- 2336 G3
- 2351 G4
- 2352 F7
- 2353 F7
- 3328 D2
- 3329 C3
- 3330 D3
- 3331 D4
- 3332 D5
- 3333 C4
- 3334 C5
- 3335 C4
- 3336 C5
- 3337 F4
- 3351 G3
- 3354 F6
- 3355 E7
- 3356 B7
- 3357 E7
- 4328 D2
- 4329 C2
- 4330 D3
- 4337 E4
- 5330 G6
- 5351 F4
- 5352 F5
- 5355 E7
- 5356 E6
- 6331 C5
- 6332 C5
- 6333 C5
- 6334 F3
- 6335 F3
- 6336 F3
- 6337 F4
- 7330 C3
- 9351 F4
- 9352 E7
- F331 E2
- F332 E2
- F333 E2
- F334 F2
- F335 F2
- F336 F2
- F338 C5
- F339 C5
- F340 C6
- F341 D5
- F351 G3
- F352 G3
- F353 G4
- F354 G4
- F356 F5
- I330 C4
- I331 C4
- I332 D4
- I333 C5
- I334 D5
- I335 D5
- I336 C6
- I337 D3
- I351 G3
- I353 F6
- I355 E7
- I357 B7

FAMILY BOARD 11 NC : 3139_123_5672
CRT BOARD 11 NC : 3139_123_5674

3139 123 5674.3

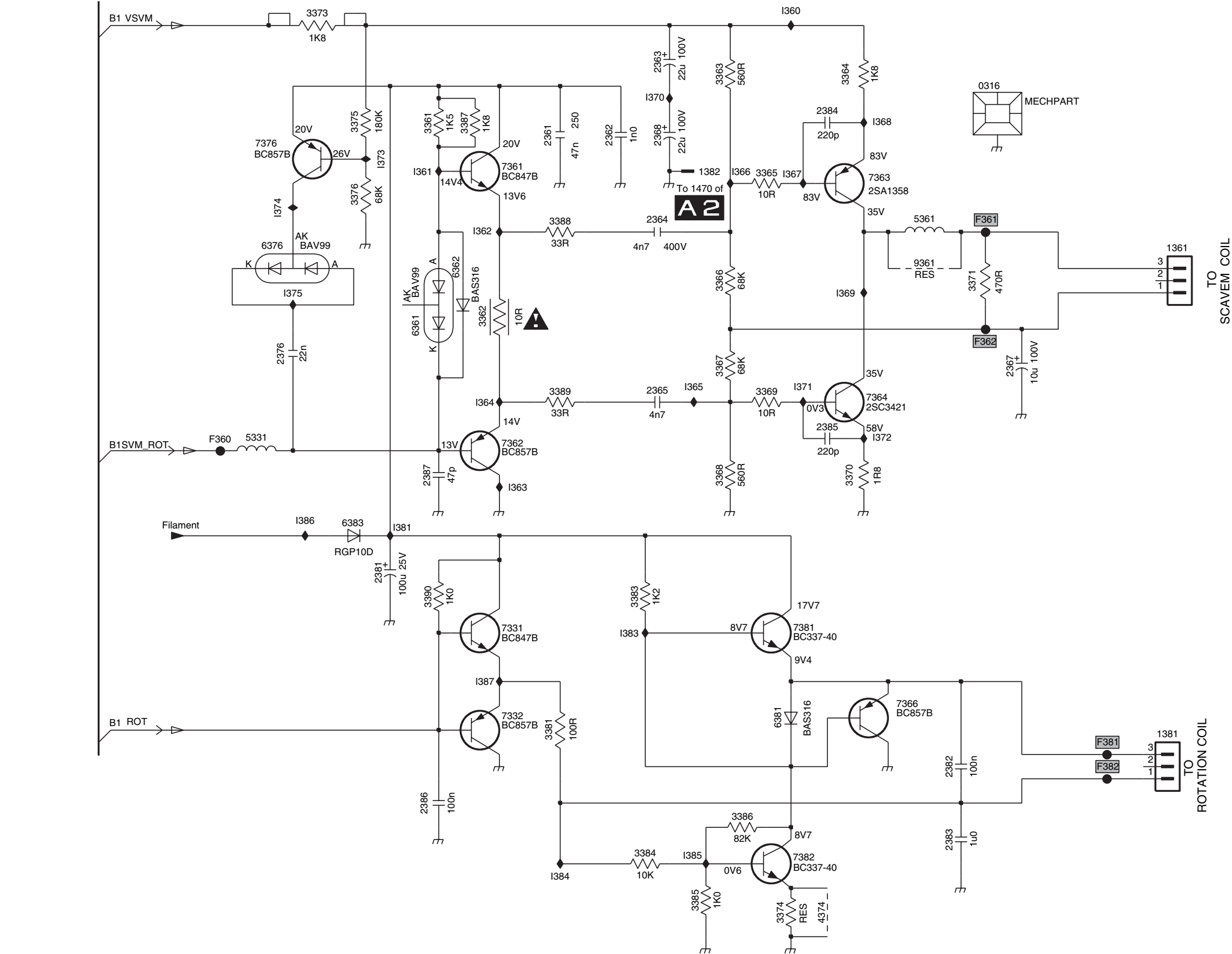
F_15760_023.eps
171105

CRT Panel: Eco Scavem

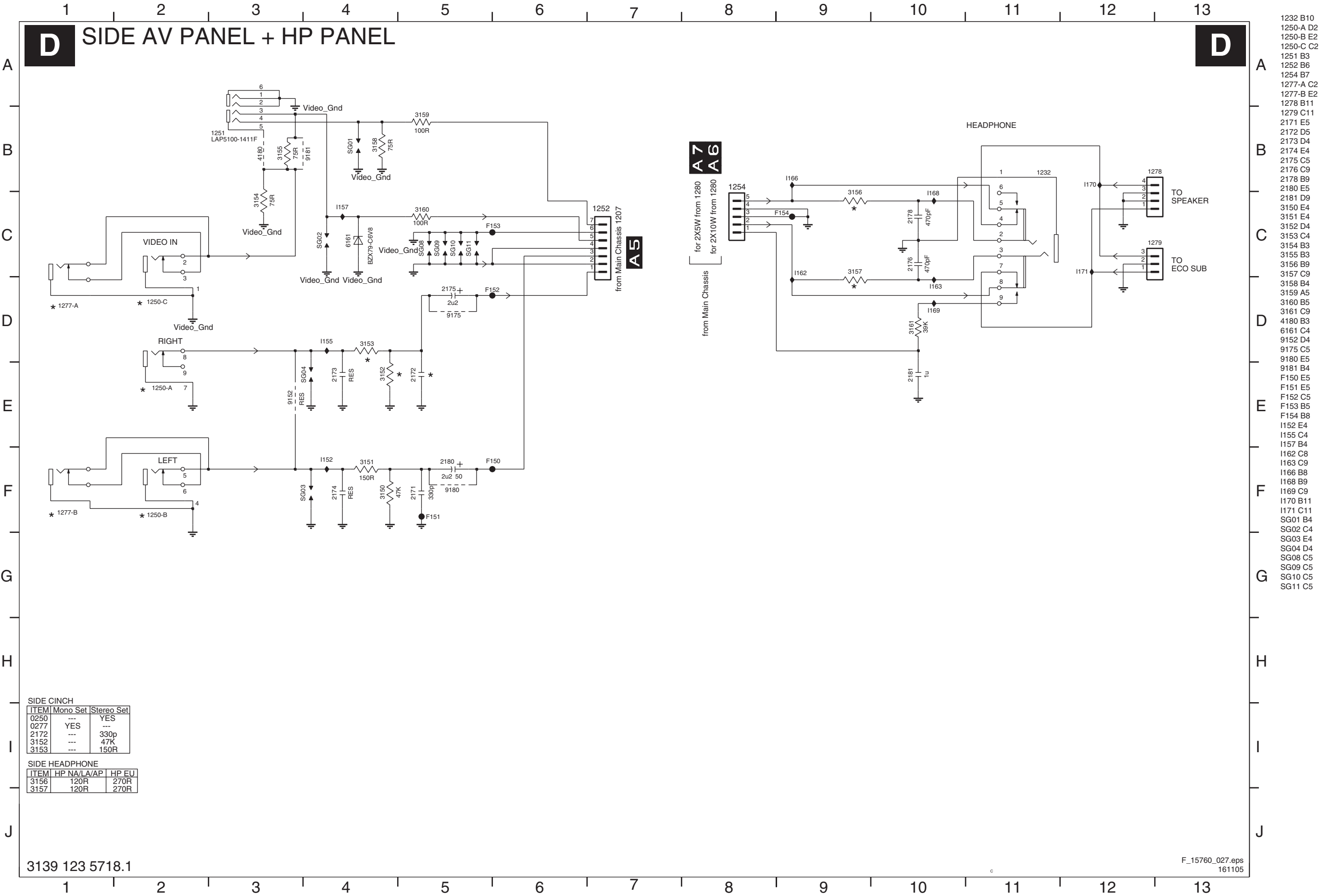
B2 ECO SCAVEM

B2

- 0316 A6
- 1361 B7
- 1381 D7
- 1382 A5
- 2361 A4
- 2362 A4
- 2363 A4
- 2364 A4
- 2365 B4
- 2367 B6
- 2368 A4
- 2376 B2
- 2381 D3
- 2382 E6
- 2383 E6
- 2384 A5
- 2385 C5
- 2386 E3
- 2387 C3
- 3361 A3
- 3362 B3
- 3363 A5
- 3364 A5
- 3365 A5
- 3366 B5
- 3367 B5
- 3368 C5
- 3369 B5
- 3370 C5
- 3371 B6
- 3373 A2
- 3374 E5
- 3375 A3
- 3376 A3
- 3381 D4
- 3383 D4
- 3384 E4
- 3385 E5
- 3386 E5
- 3387 A3
- 3388 A4
- 3389 B4
- 3390 D3
- 4374 E5
- 5331 C2
- 5361 A6
- 6361 B3
- 6362 B3
- 6376 B2
- 6381 D5
- 6383 C3
- 7331 D3
- 7332 D3
- 7361 A3
- 7362 C3
- 7363 A6
- 7364 C6
- 7366 D6
- 7376 A2
- 7381 D5
- 7382 E5
- 9361 B6
- F360 C2
- F361 A6
- F362 B6
- F381 E7
- F382 E7
- I360 A5
- I361 A3
- I362 B3
- I363 C4
- I364 C3
- I365 B5
- I366 A5
- I367 A5
- I368 A6
- I369 B5
- I370 A4
- I371 B5
- I372 C6
- I373 A3
- I374 A2
- I375 B2
- I381 C3
- I383 D4
- I384 E4
- I385 E5
- I386 C2
- I387 D3



Side AV + Headphone Panel



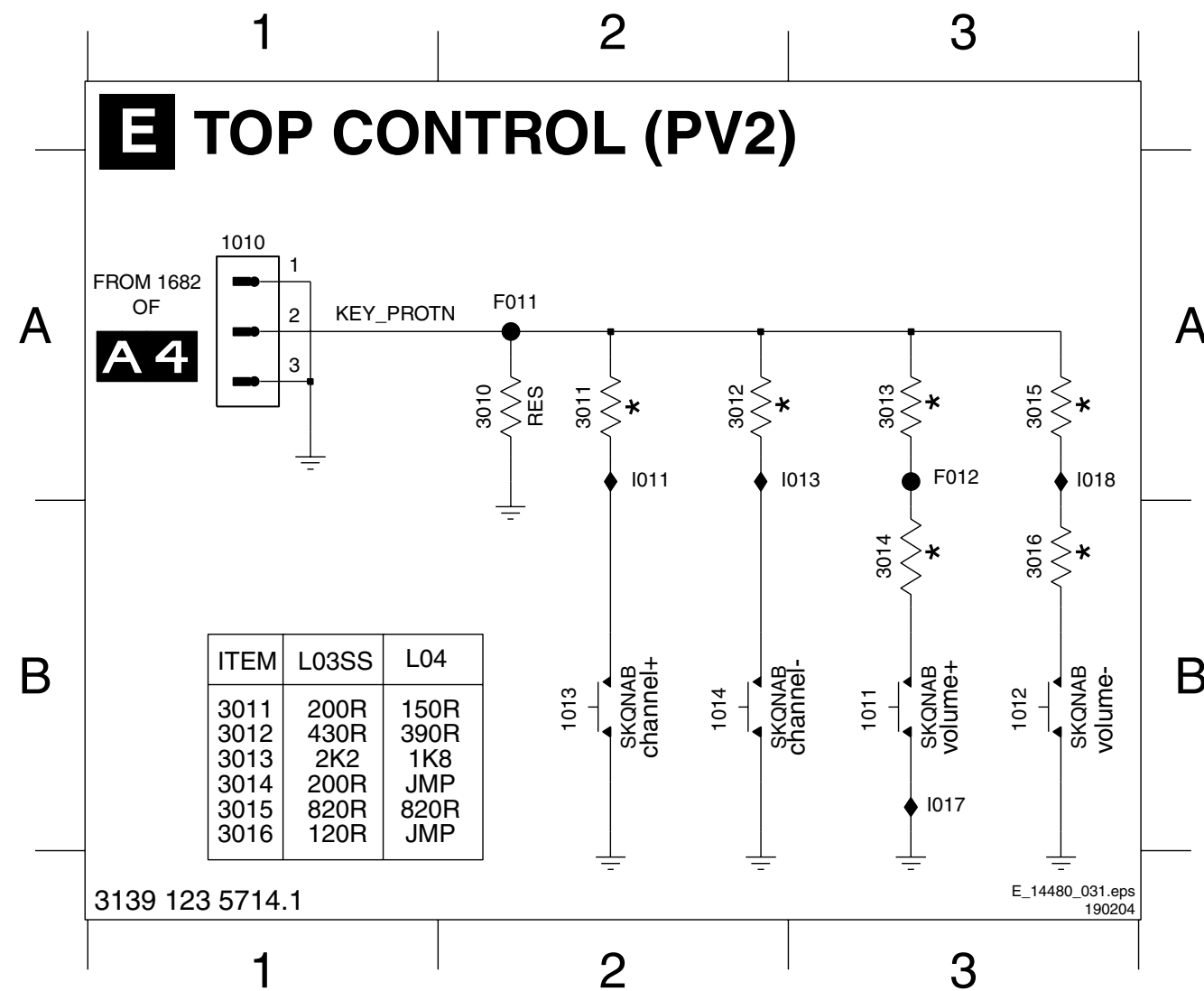
SIDE CINCH

ITEM	Mono Set	Stereo Set
0250	---	YES
0277	YES	---
2172	---	330p
3152	---	47K
3153	---	150R

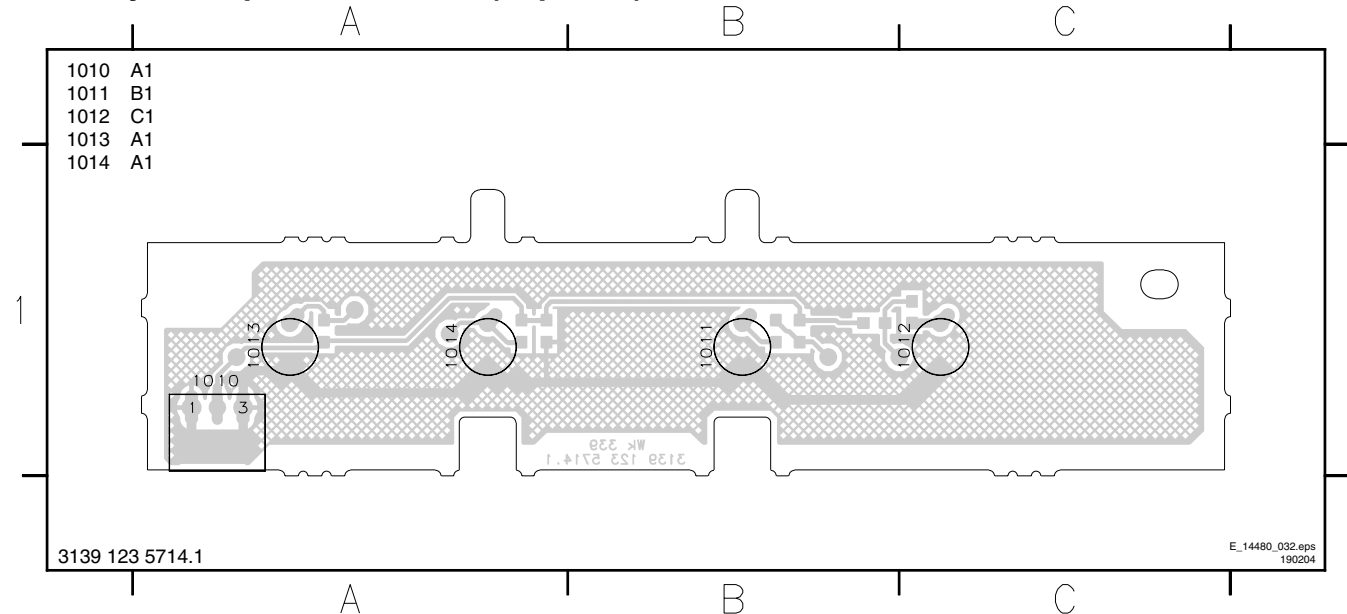
SIDE HEADPHONE

ITEM	HP NA/LA/AP	HP EU
3156	120R	270R
3157	120R	270R

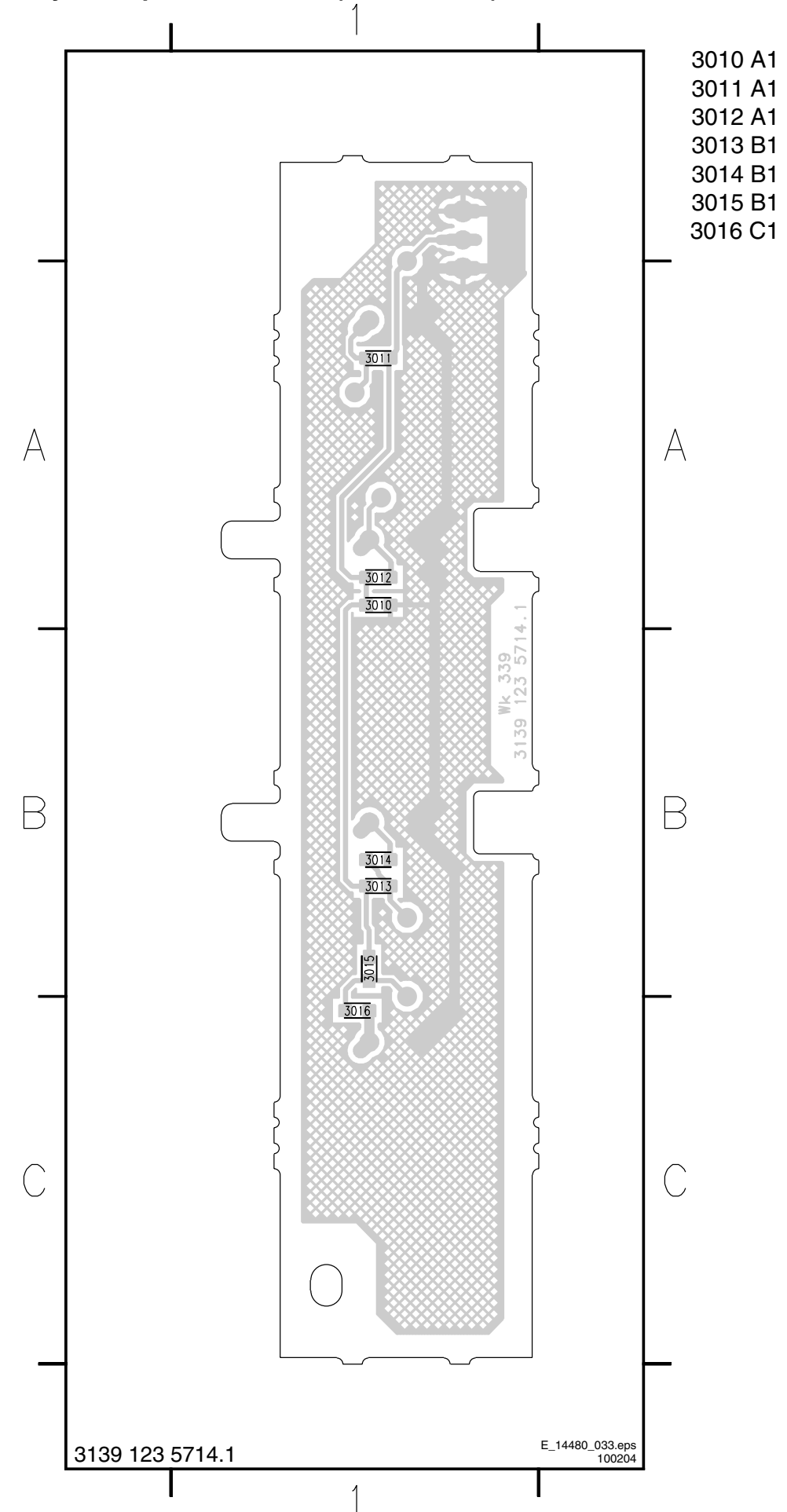
1010 A1	1012 B3	1014 B2	3011 A2	3013 A3	3015 A3	F011 A2	I011 A2	I017 B3
1011 B3	1013 B2	3010 A2	3012 A2	3014 B3	3016 B3	F012 A3	I013 A3	I018 A3



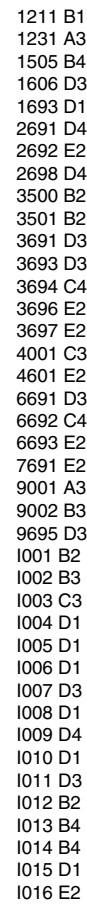
Layout Top Control Panel (Top Side)



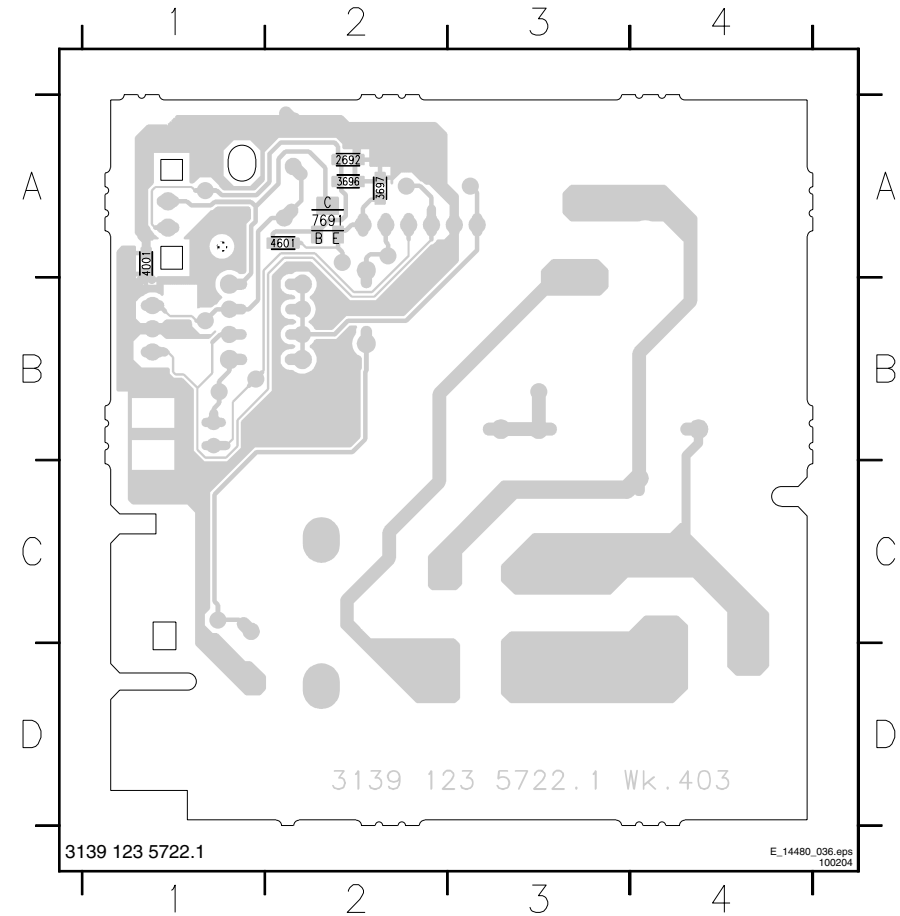
Layout Top Control Panel (Bottom Side)



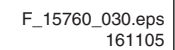
FRONT INTERFACE PANEL



1211	D1	1606	D4	2698	A3	3691	B3	6691	B4	9001	C1	9695	B3
1231	C3	1693	A3	3500	B2	3693	B3	6692	B4	9002	D2	9696	A3
1505	A1	2691	A4	3501	B3	3694	B3	6693	A4	9685	B3		

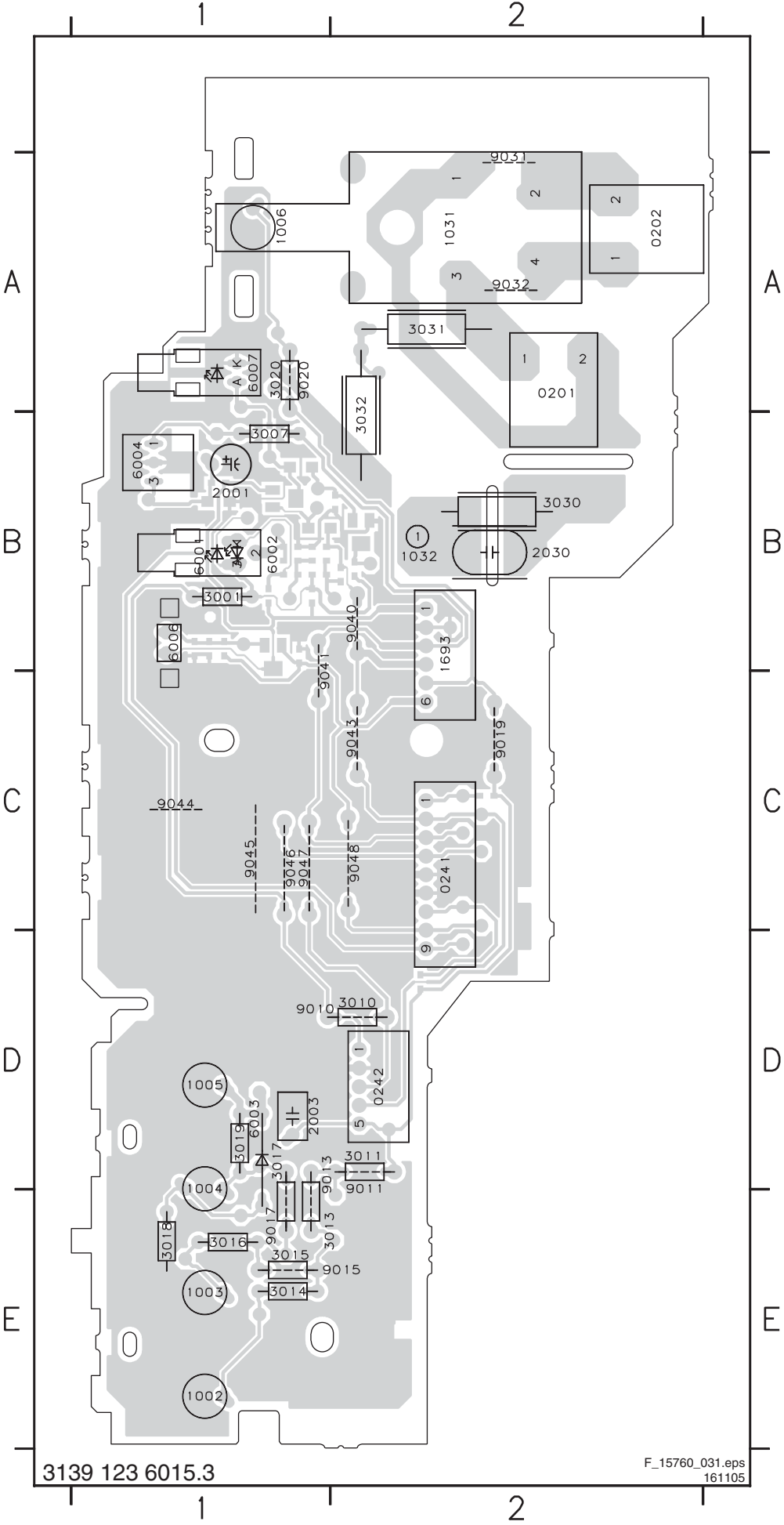


MAINS SWITCH PANEL(SL5)



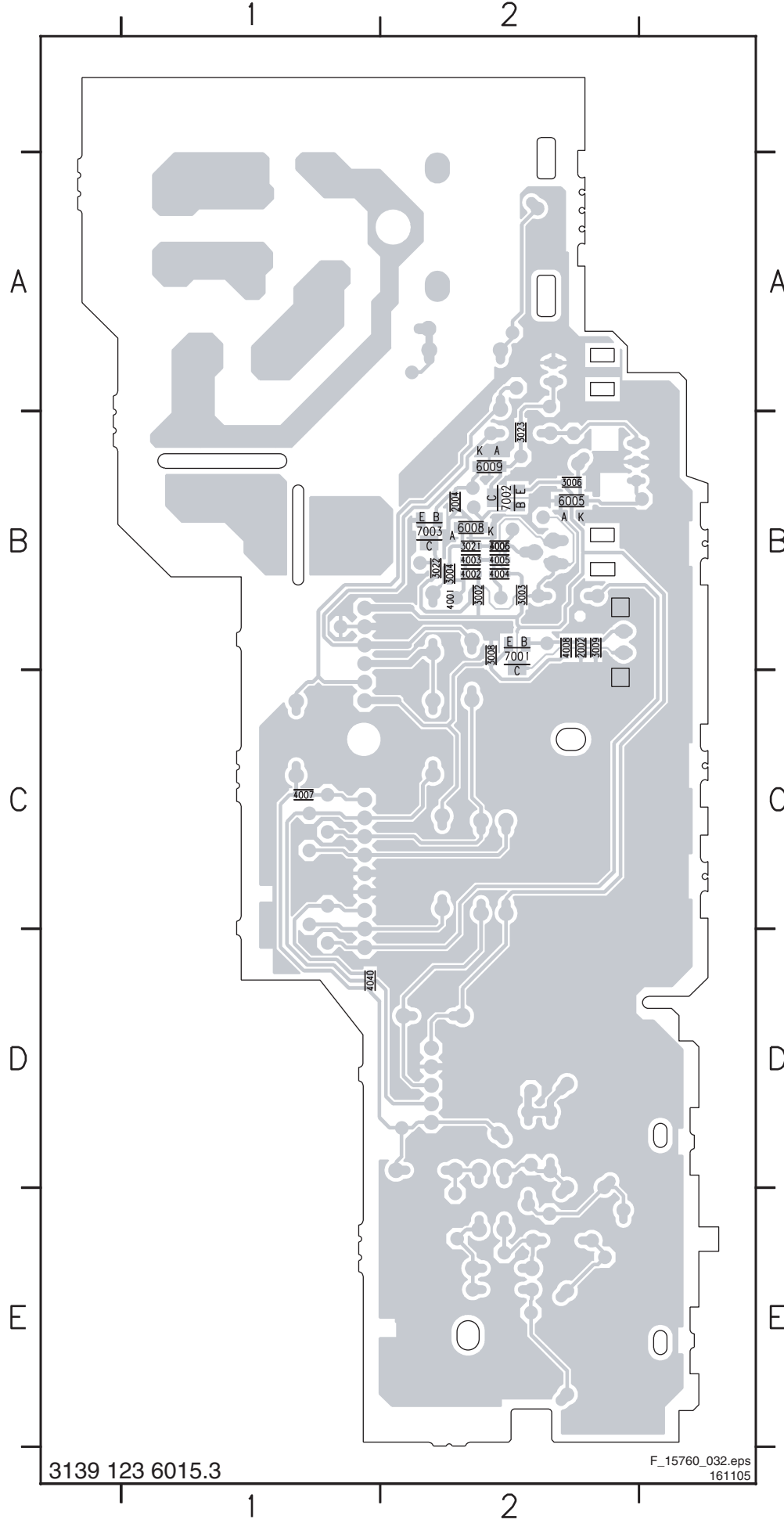
0201 B7	9019 D4
0202 B9	9020 E4
0241 A1	9031 A8
0242 B2	9032 B8
1002 D5	F001 A2
1003 D5	F002 A2
1004 C6	F003 A2
1005 D6	F004 A2
1006 D5	F005 A2
1031 A8	F007 B2
1032 C9	F008 B2
1693 D2	F009 B2
2001 D3	F010 B7
2002 E3	F011 B7
2003 C4	F012 B9
2004 B6	F013 B9
2030 B8	I002 B7
3001 A4	I003 C7
3002 A5	I004 A4
3003 A5	I005 D2
3004 A4	I006 B5
3005 B4	I007 B9
3006 C3	I008 C9
3007 D3	I009 D3
3008 E3	I010 C4
3009 E3	I011 D4
3010 C2	I012 A5
3011 C4	I013 D2
3013 C5	I015 D3
3014 C5	I016 E3
3015 C5	I017 C4
3016 C5	I018 D5
3017 C5	I019 D5
3018 D6	I020 B4
3019 C6	I021 C5
3020 D4	I023 C6
3021 A5	I024 D6
3022 A5	I025 C5
3023 A6	I026 D6
3030 B8	I027 A5
3031 B7	I028 A6
3032 C7	I029 A6
4001 A4	I030 B6
4002 A4	I031 B6
4003 A4	
4004 B4	
4005 B4	
4006 B5	
4007 A3	
4008 E3	
6001 A4	
6002-1 B5	
6002-2 B4	
6003 C6	
6004 C3	
6005 D3	
6006 E3	
6007 B6	
6008 A5	
6009 A6	
7001 E3	
7002 A6	
7003 B6	
9010 C2	
9011 C4	
9013 C5	
9015 C5	
9017 C5	

Layout Main Switch Panel (For SL5 Styling) (Top Side)



- 0201 A2
- 0202 A2
- 0241 C2
- 0242 D2
- 1002 E1
- 1003 E1
- 1004 D1
- 1005 D1
- 1006 A1
- 1031 A2
- 1032 B2
- 1693 B2
- 2001 B1
- 2003 D1
- 2030 B2
- 3001 B1
- 3007 B1
- 3010 D2
- 3011 D2
- 3013 E1
- 3014 E1
- 3015 E1
- 3016 E1
- 3017 D1
- 3018 E1
- 3019 D1
- 3020 A1
- 3030 B2
- 3031 A2
- 3032 B2
- 6001 B1
- 6002 B1
- 6003 D1
- 6004 B1
- 6006 B1
- 6007 A1
- 9010 D1
- 9011 D2
- 9013 D1
- 9015 E2
- 9017 E1
- 9019 C2
- 9020 A1
- 9031 A2
- 9032 A2
- 9040 B2
- 9041 C1
- 9043 C2
- 9044 C1
- 9045 C1
- 9046 C1
- 9047 C1
- 9048 C2

Layout Main Switch Panel (For SL5 Styling) (Bottom Side)



- 2002 B2
- 2004 B2
- 3002 B2
- 3003 B2
- 3004 B2
- 3005 B2
- 3006 B2
- 3008 B2
- 3009 B2
- 3021 B2
- 3022 B2
- 3023 B2
- 4001 B2
- 4002 B2
- 4003 B2
- 4004 B2
- 4005 B2
- 4006 B2
- 4007 C1
- 4008 B2
- 4040 D1
- 6005 B2
- 6008 B2
- 6009 B2
- 7001 B2
- 7002 B2
- 7003 B2

This image shows a full page of blank, lined paper. It features approximately 30 evenly spaced horizontal grey lines across its entire width, typical of notebook or legal stationery. The background is a solid off-white color, and there are no margins, text, or other markings present.

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments and Settings

Notes:

- The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter 5. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.
- Figures below can deviate slightly from the actual situation, due to different set executions.

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage (depends on region):
 - AP-NTSC: 120 V_{AC} or 230 V_{AC} / 50 Hz (± 10%).
 - AP-PAL-multi: 120 - 230 V_{AC} / 50 Hz (± 10%).
 - EU: 230 V_{AC} / 50 Hz (± 10%).
 - LATAM-NTSC: 120 - 230 V_{AC} / 50 Hz (± 10%).
 - US: 120 V_{AC} / 60 Hz (± 10%).
 - Connect the set to the AC Power via an isolation transformer with low internal resistance.
 - Allow the set to warm up for approximately 15 minutes.
 - Measure voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
- Caution:** It is not allowed to use heatsinks as ground.
- Test probe: R_i > 10 Mohm, C_i < 20 pF.
 - Use an isolated trimmer/screwdriver to perform alignments.

8.2 Hardware Alignments

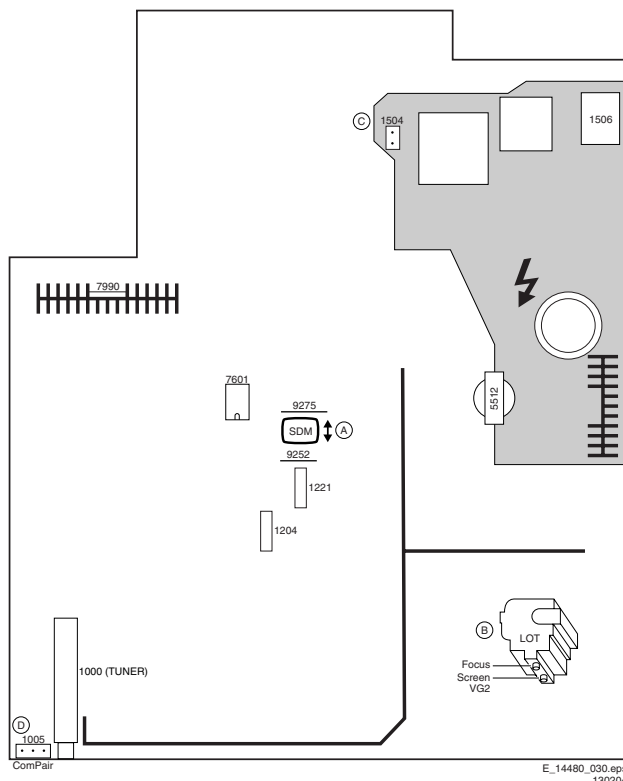


Figure 8-1 Top view family board

8.2.1 Vg2 Adjustment

1. Activate the SAM.
 2. Go to the WHITE TONE sub menu.
 3. Set the values of NORMAL RED, GREEN, and BLUE to "32".
 4. Go, via the MENU key, to the normal user menu and set
 5. SATURATION/COLOR to "0".
 6. CONTRAST to "0".
 7. BRIGHTNESS to minimum (OSD just visible).
 8. Return to the SAM via the MENU key.
 9. Connect the RF output of a pattern generator to the antenna input. Test pattern is a 'black' picture (blank screen on CRT without any OSD info) with a signal strength of 1 V_{pp}.
 10. Connect the 10:1 probe to the positive side of the vertical deflection (positive flyback pulse). Ground the scope at the CRT-panel. Trigger the scope on the vertical pulse.
 11. Measure with a 100:1 probe (R_i > 10 Mohm, C_i < 3.5 pF) at the cathodes of the picture tube socket (pin 8 - RED, pin 6 - GREEN and pin 11 - BLUE). Measure the level of the black current measuring pulses. These are the 2nd line (Red), 3rd line (Green), and 4th line (Blue) directly after the frame blanking.
- Remark:** This chassis is using a TDA110xx (Hercules) series. There are two different measuring pulses at each of the R, G, and B cathodes. The above-mentioned level applies to the lower pulse (which is the nearer one to the ground) of the gun with highest cut-off voltage.
12. Select the cathode with the highest V_{dc} value for the alignment. Adjust the V_{cutoff} of this gun with the SCREEN potentiometer (see figure "Top view family board") on the LOT to the 160V.
 13. Restore BRIGHTNESS and CONTRAST to normal (= 31).

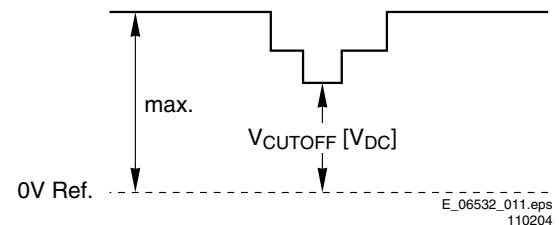
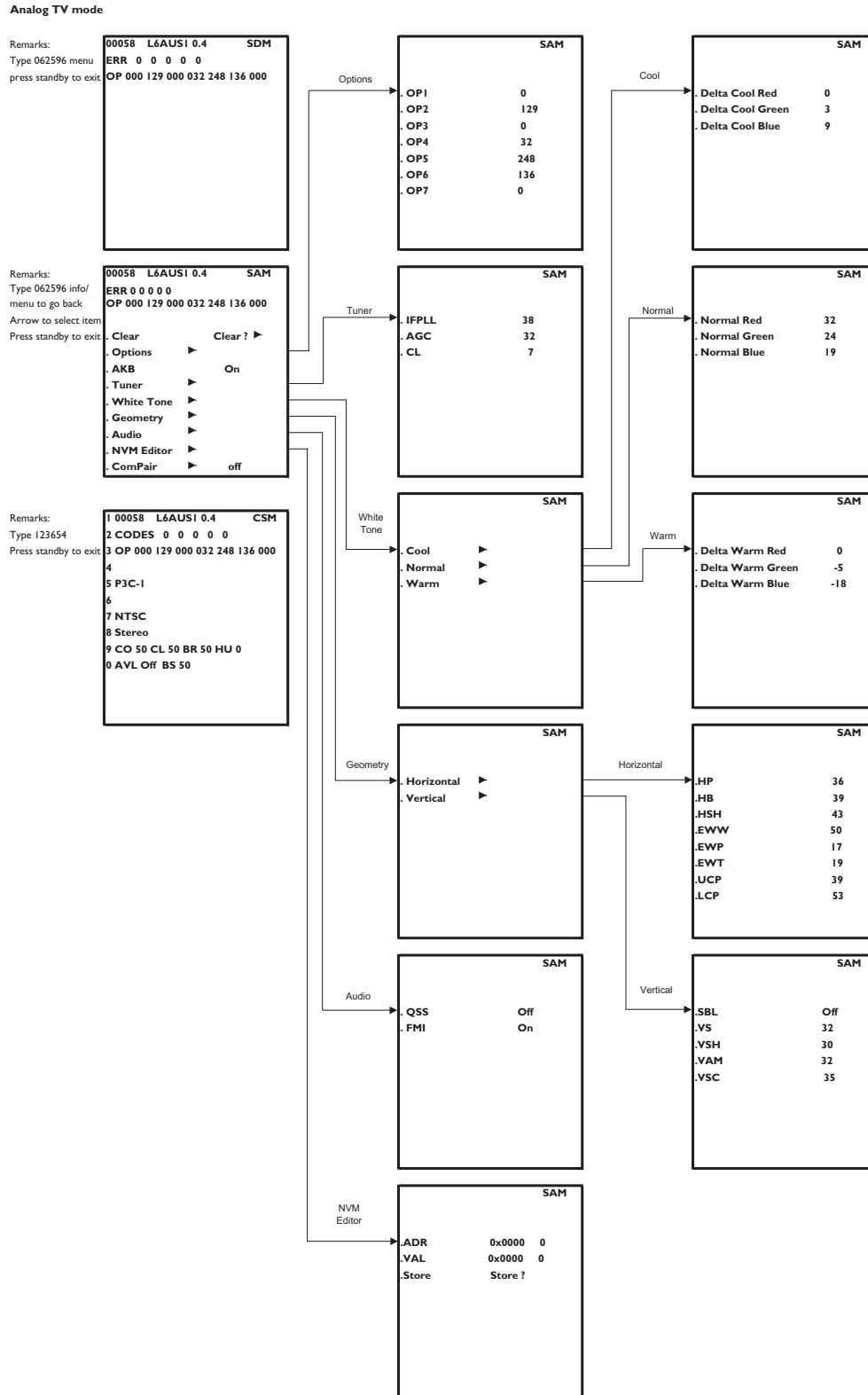


Figure 8-2 V_{cutoff} waveform

8.2.2 Focusing

1. Tune the set to a circle or crosshatch test pattern (use an external video pattern generator).
2. Choose picture mode NATURAL (or MOVIES) with the SMART PICTURE button on the remote control transmitter.
3. Adjust the FOCUS potentiometer (see figure "Top view family board") until the vertical lines at 2/3 from east and west, at the height of the center line, are of minimum width without visible haze. Also the vertical lines may not be too wide compared to the central lines in the picture. Check this for both cross-hatch and circle pattern.

8.3 Software Alignments and Settings



F_15760_001.eps
101105

Figure 8-3 Service Mode overview (Analog TV mode)

Enter the Service Alignment Mode (see also chapter 5 “Service Modes, ...”). The SAM menu will now appear on the screen.

Select one of the following alignments:

- Options
- Tuner
- White Tone
- Geometry
- Audio

8.3.1 Options

Options are used to control the presence/absence of certain features and hardware.

How to change an Option Byte

An Option Byte represents a number of different options. Changing these bytes directly, makes it possible to set all options very fast. All options are controlled via seven option bytes. Select the option byte (OP1.. OP7) with the MENU UP/DOWN keys, and enter the new value.

Leaving the OPTION submenu saves the changes in the Option Byte settings. Some changes will only take effect after the set has been switched "off" and "on" with the AC power switch (cold start).

How to calculate the value of an Option Byte

Calculate an Option Byte value (OP1 .. OP7) in the following way:

- Check the status of the single option bits (OB): are they enabled (1) or disabled (0).
- When an option bit is enabled (1) it represents a certain value (see column "Bit value" in table below). When an option bit is disabled, its value is 0.
- The total value of an Option Byte (decimal) is formed by the sum of its eight option bits. The factory values are printed on a sticker on the CRT.

Table 8-1 Option Byte calculation

Bit (value)	OP1	OP2	OP3	OP4	OP5	OP6	OP7
0 (1)	OB10	OB20	OB30	OB40	OB50	OB60	OB70
1 (2)	OB11	OB21	OB31	OB41	OB51	OB61	OB71
2 (4)	OB12	OB22	OB32	OB42	OB52	OB62	OB72
3 (8)	OB13	OB23	OB33	OB43	OB53	OB63	OB73
4 (16)	OB14	OB24	OB34	OB44	OB54	OB64	OB74
5 (32)	OB15	OB25	OB35	OB45	OB55	OB65	OB75
6 (64)	OB16	OB26	OB36	OB46	OB56	OB66	OB76
7 (128)	OB17	OB27	OB37	OB47	OB57	OB67	OB77
Total:	Sum	Sum	Sum	Sum	Sum	Sum	Sum

Option bit definition

Option Byte 1 (OP1)

- **OB17: PHILIPS TUNER**
 - 0: ALPS / MASCO compatible tuner is in use.
 - 1: Philips compatible tuner is in use.
- **OB11: VIRGIN MODE**
 - 0: Virgin mode is disabled or not applicable.
 - 1: Virgin mode is enabled. Plug and Play menu item will be displayed to perform installation at the initial startup of the TV when VIRGIN MODE is set to "1". After installation is finished, this option bit will be automatically set to "0".

Option Byte 2 (OP2)

- **OB27: SC**
 - 0: Soft clipping is disabled.
 - 1: Soft clipping is enabled.
- **OB26: GREEN UI**
 - 0: Green UI is disabled (for Philips brand).
 - 1: Green UI is enabled (for Magnavox brand).
 - Note: only for NAFTA region.
- **OB23: TILT**
 - 0: Rotate Picture is disabled or not applicable.
 - 1: Rotate Picture is enabled.
- **OB22: FINE TUNING**
 - 0: Fine Tuning for Channel Offset is disabled or not applicable.
 - 1: Fine Tuning for Channel Offset is enabled.

- **OB20: HUE**
 - 0: Hue/Tint Level is disabled or not applicable.
 - 1: Hue/Tint Level is enabled.

Option Byte 3 (OP3)

- **OB37: EW FUNCTION**
 - 0: EW function is disabled. In this case, only Expand 4:3 is allowed, Compress 16:9 is not applicable.
 - 1: EW function is enabled. In this case, both Expand 4:3 and Compress 16:9 are applicable.
- **OB33: VIRTUAL DOLBY**
 - 0: Virtual Dolby is not applicable.
 - 1: Virtual Dolby is applicable.
- **OB32: WIDE SCREEN**
 - 0: Software is used for 4:3 sets or not applicable.
 - 1: Software is used for 16:9 sets.

Option Byte 4 (OP4)

- **OB47: COMPRESS 16:9**
 - 0: Disabled or not applicable.
 - 1: To show a 16:9 picture on a 4:3 set (to avoid "skinny" effect).
- **OB45: ULTRA BASS**
 - 0: Ultra Bass is disabled or not applicable.
 - 1: Ultra Bass is enabled.
 - Default setting is "0".

Option Byte 5 (OP5)

- **OB57: AV1**
 - 0: AV1 source is not present.
 - 1: AV1 source is present.
- **OB56: AV2**
 - 0: AV2 source is not present.
 - 1: AV2 source is present.
 - Note: For EU, when AV2="1", both EXT2 and SVHS2 should be included in the OSD loop.
- **OB55: AV3**
 - 0: Side/Front AV3 source is not present.
 - 1: Side/Front AV3 source is present.
- **OB54: CVI**
 - 0: CVI source is not available.
 - 1: CVI source is available.
- **OB53: SVHS2**
 - 0: SVHS2 source is not available.
 - 1: SVHS2 source is available.
 - Note: This option bit is not applicable for EU.
- **OB52: SVHS3**
 - 0: SVHS3 source is not available.
 - 1: SVHS3 source is available.
 - Note: This option bit is not applicable for EU.

Option Byte 6 (OP6)

- **OB65: FM TRAP**
 - 0: FM Trap is not present.
 - 1: FM Trap is present.
 - Note: Only for LATAM region.
- **OB64: COMBFILTER**
 - 0: 3D-comb filter is not present.
 - 1: 3D-comb filter is present.
- **OB63: ACTIVE CONTROL**
 - 0: Active Control feature is disabled or not applicable.
 - 1: Active Control feature is enabled.

Option Byte 7 (OP7)

- **OB73: DIGITAL MODULE RESET CONTROL**
 - 0: Reset control is not used.
 - 1: Reset control is used (default value).

Option Bit Assignment

Table 8-2 Option code overview per model

Byte	Bit	Option	27MT5005D/37	27MT6005D/37	27PT9015D/37	32PT7005D/37	32PT9005D/37
1	7	Philips_Tuner	0	0	0	0	0
	6		0	0	0	0	0
	5		0	0	0	0	0
	4		0	0	0	0	0
	3		0	0	0	0	0
	2		0	0	0	0	0
	1	Virgin_Mode	0	0	0	0	0
	0		0	0	0	0	0
Decimal			0	0	0	0	0
2	7	SC	0	0	0	0	0
	6	Green_UI	1	1	0	1	0
	5		0	0	0	0	0
	4		0	0	0	0	0
	3	Tilt	0	0	0	0	1
	2	Fine_Tuning	0	0	0	0	0
	1		0	0	0	0	0
	0	Hue	1	1	1	1	1
Decimal			65	65	1	65	9
3	7	EW_Function	1	1	1	1	1
	6		0	0	0	0	0
	5		0	0	0	0	0
	4		0	0	0	0	0
	3	Virtual_Dolby	0	0	0	0	0
	2	Wide_Screen	0	0	0	0	0
	1		0	0	0	0	0
	0		0	0	0	0	0
Decimal			128	128	128	128	128
4	7	Compress_16:9	1	1	1	1	1
	6		0	0	0	0	0
	5	Ultra_Bass	0	1	1	0	1
	4		0	0	0	0	0
	3		0	0	0	0	0
	2		0	0	0	0	0
	1		0	0	0	0	0
	0		0	0	0	0	0
Decimal			128	160	160	128	160
5	7	AV1	1	1	1	1	1
	6	AV2	1	1	1	1	1
	5	AV3	1	1	1	1	1
	4	CVI	1	1	1	1	1
	3	SVHS2	1	1	1	1	1
	2	SVHS3	0	0	0	0	0
	1		0	0	0	0	0
	0		0	0	0	0	0
Decimal			248	248	248	248	248
6	7		0	0	0	0	0
	6		0	0	0	0	0
	5	FM Trap	0	0	0	0	0
	4	Combfilter	0	0	0	0	1
	3	Active_Control	0	1	1	0	1
	2		0	0	0	0	0
	1		0	0	0	0	0
	0		0	0	0	0	0
Decimal			0	8	8	0	24
7	7		0	0	0	0	0
	6		0	0	0	0	0
	5	-	0	0	0	0	0
	4		0	0	0	0	0
	3	Digital_Module_Reset_Ctrl	1	1	1	1	1
	2		0	0	0	0	0
	1		0	0	0	0	0
	0		0	0	0	0	0
Decimal			8	8	8	8	8

8.3.2 Tuner

Note: Described alignments are only necessary when the NVM (item 7601) is replaced.

IF PLL

This adjustment is auto-aligned. Therefore, no action is required.

AGC (AGC take over point)

1. Set the external pattern generator to a color bar video signal and connect the RF output to aerial input. Set amplitude to 10 mV and set frequency to 61.25 MHz (channel 3).
2. Connect a DC multimeter to pin 1 of the tuner (item 1000 on the main panel).
3. Activate the SAM.
4. Go to the TUNER sub menu.
5. Select AGC with the UP/DOWN cursor keys.
6. Adjust the AGC-value (default value is 27) with the LEFT/RIGHT cursor keys until the voltage at pin 1 of the tuner lies between 3.8 and 2.3 V (default value is "20").
7. Switch the set to STANDBY, in order to store the alignments.

CL (Cathode drive level)

Always set to "5".

8.3.3 White Tone

In the WHITE TONE sub menu, the values of the black cut off level can be adjusted. Normally, no alignment is needed, and you can use the given default values.

The color temperature mode (NORMAL, COOL and WARM) and the color (R, G, and B) can be selected with the UP/DOWN RIGHT/LEFT cursor keys. The value can be changed with the LEFT/RIGHT cursor keys. First, select the values for the NORMAL color temperature. Then select the values for the COOL and WARM mode. After alignment, switch the set to STANDBY, in order to store the alignments.

Default settings: See table "NVM Default values" in chapter 5 "Service Modes, ...".

8.3.4 Geometry

The geometry alignments menu contains several items to align the set, in order to obtain correct picture geometry.

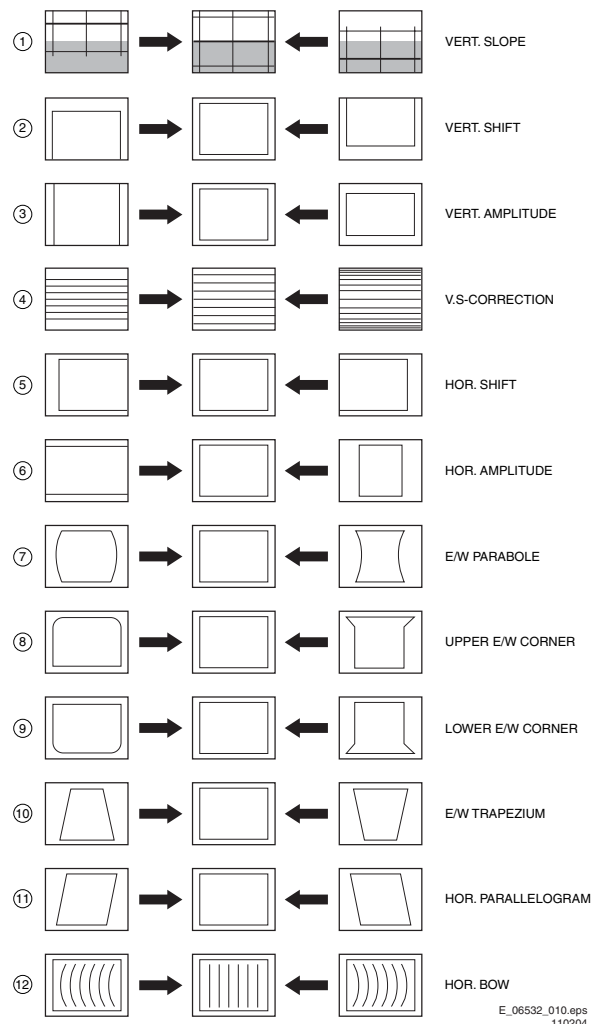


Figure 8-4 Geometry alignments

1. Connect an external video pattern generator to the aerial input of the TV-set and input a crosshatch test pattern. Set the generator amplitude to at least 1 mV and set frequency to 61.25 MHz (channel 3).
2. Set 'Smart Picture' to NATURAL (or MOVIES).
3. Activate the SAM menu (see chapter 5 "Service Modes, ...").
4. Go to the GEOMETRY sub menu.
5. Choose HORIZONTAL or VERTICAL alignment

Now the following alignments can be performed:

Horizontal

- **Horizontal Parallelogram (HP).** Align straight vertical lines in the top and the bottom; vertical rotation around the center.
- **Horizontal Bow (HB).** Align straight horizontal lines in the top and the bottom; horizontal rotation around the center.
- **Horizontal Shift (HS).** Align the horizontal center of the picture to the horizontal center of the CRT.
- **East West Width (EW).** Align the picture width until the complete test pattern is visible.
- **East West Parabola (PW).** Align straight vertical lines at the sides of the screen.
- **Upper Corner Parabola (UCP).** Align straight vertical lines in the upper corners of the screen.
- **Lower Corner Parabola (LCP).** Align straight vertical lines in the lower corners of the screen.
- **East West Trapezium (TC).** Align straight vertical lines in the middle of the screen.
- **H60 (Delta HSH for 60Hz, if present).** Align straight horizontal lines if NTSC system is used (60 Hz) i.s.o. PAL (50 Hz). Default value is "9".

Vertical

- **Service blanking (SBL).** Switch the blanking of the lower half of the screen "on" or "off" (to be used in combination with the vertical slope alignment).
- **Vertical Shift (VSH).** Align the vertical centering so that the test pattern is located vertically in the middle. Repeat the 'vertical amplitude' alignment if necessary.
- **Vertical slope (VS).** Align the vertical center of the picture to the vertical center of the CRT. This is the first of the vertical alignments to perform. For an easy alignment, set SBL to "on".
- **Vertical Amplitude (VA).** Align the vertical amplitude so that the complete test pattern is visible.
- **Vertical S-Correction (SC).** Align the vertical linearity, meaning that vertical intervals of a grid pattern must be equal over the entire screen height.
- **Vertical Zoom (VX, if present).** The vertical zoom is added in for the purpose of development. It helps the designer to set proper values for the movie expand or movie(16x9) compress. Default value is "25".
- **V60 (Delta VAM for 60Hz, if present).** Align straight vertical lines if NTSC system (60 Hz) is used i.s.o. PAL (50 Hz). Default value is "-2".

In the table "NVM Default values" in chapter 5 "Service Modes, ...", you will find the GEOMETRY default values for the different sets.

8.3.5 Audio

No alignments are needed for the audio sub menu. Use the given default values.

QSS (Quasi Split Sound)

- For NICAM/2CS sound system (EU/AP, except for AP-NTSC), set to "On".
- For AV-Stereo sound system (sets without NICAM), set to "On".
- For all other sets (NAFTA/LATAM/AP-NTSC), set to "Off".

FMI (Freq. Modulation Intercarrier)

- For NICAM/2CS sound system (EU/AP, except for AP-NTSC), set to "On".
- For AV-Stereo sound system (sets without NICAM), set to "Off".
- For dBx/non-dBx sound systems, set to "On",

9. Circuit Descriptions, List of Abbreviations, and IC Data Sheets

Index of this chapter:

- 9.1 Introduction
- 9.2 ATSC Module
- 9.3 Supply Architecture
- 9.4 Power Modes
- 9.5 Abbreviation List
- 9.6 IC Data Sheets

Notes:

- Only **new** circuits compared to the L04 chassis are described in this chapter. For the other circuit descriptions, see the L04 manual.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in sections "Block Diagrams, ..." and/or "Electrical Diagrams". Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

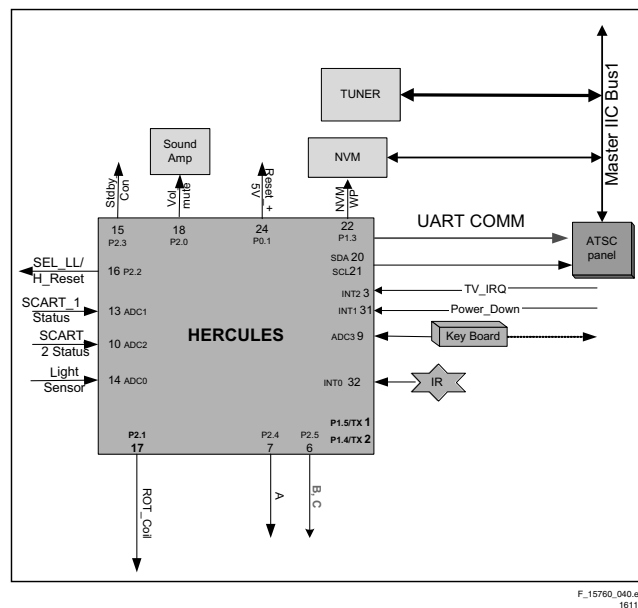


Figure 9-1 Chassis block diagram

The "L04.6 ATSC" platform is derived from the L04 chassis. It is designed to be a Standard Definition (SD) 60 Hz set for the NAFTA market segments. Screen sizes are 27- and 32-inch. The "L04" chassis, developed by Philips Singapore BCT MTV, was a global "50/60Hz" chassis for the BASIC and BASIC+ market segment.

The fundamental electrical properties and key components of L04.6 ATSC are:

- Hercules = TDA12000 with integrated Video processing, Sound processing and Microprocessor.
- Audio Amplifier = TDA2616Q with the capability to drive up to 2X10W stereo sets.
- Zoran ZR39640: ATSC decoder + Scalar.

The standard architecture consists of a Main panel (called "family board"), a Picture Tube panel, a Side I/O panel, a Top Control panel, and an ATSC panel. The Main panel carries the small and large signals on the same board, and uses primarily conventional components, with some surface mounted devices in the audio and video processing part.

The ATSC digital module is a TV bolt on module with a terrestrial RF Digital ATSC 8VSB (Free to Air) front end and Cable RF Digital ATSC, QAM (Cable in-the-clear) front end. For Service, this is a black box. When defective, this module must be replaced, and the defective module must be sent to the centralized repair workshop.

The functions for video/audio processing, microprocessor (uP), and CC/Teletext (TXT) decoding are all combined in one IC

(TDA120xxH, item 7200), the so-called third generation Ultimate One Chip (UOC-III) or "Hercules". This chip is mounted on the "solder" side of the main panel, and has the following features:

- Control, small signal, mono/stereo, and extensive Audio/Video switching in one IC.
- Upgrade with digital sound & video processing.
- Alignment free IF.
- FM sound 4.5/5.5/6.0/6.5, no traps/bandpass filters.
- Full multi-standard color decoder.
- One Xtal reference for all functions (microprocessor, RCP, TXT/CC, RDS, color decoder, and stereo sound processor).

The tuning system features 181 channels with on-screen display. The main tuning system uses a tuner, a microcomputer, and a memory IC mounted on the main panel. The microcomputer communicates with the memory IC, the customer keyboard, remote receiver, tuner, signal processor IC and the audio output IC via the I2C bus. The memory IC retains the settings for favorite stations, customer-preferred settings, and service / factory data.

The on-screen graphics and closed caption decoding are done within the microprocessor where they are added to the main signal.

The chassis uses a Switching Mode Power Supply (SMPS) for the main voltage source. The chassis has a 'hot' ground reference on the primary side and a cold ground reference on the secondary side of the power supply and the rest of the chassis.

9.2 ATSC Module

9.2.1 Block Diagram

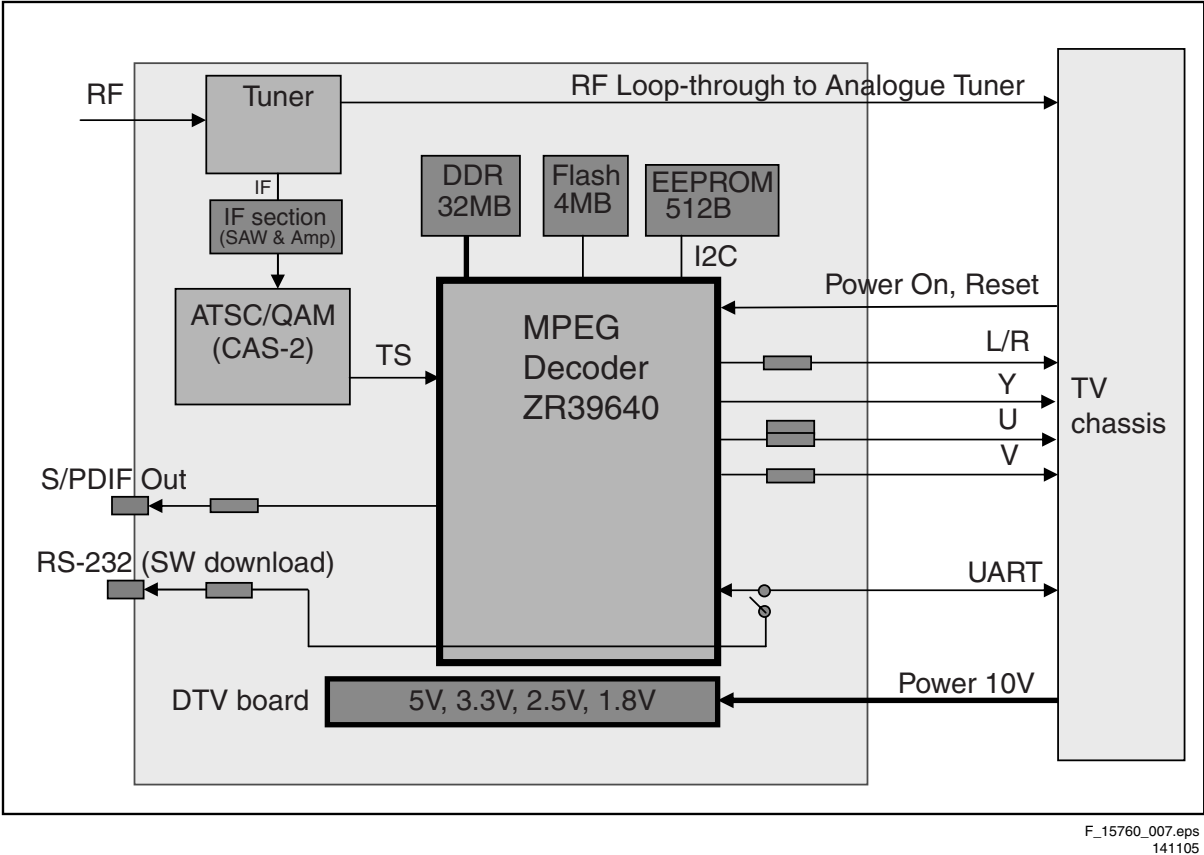


Figure 9-2 Block diagram ATSC module

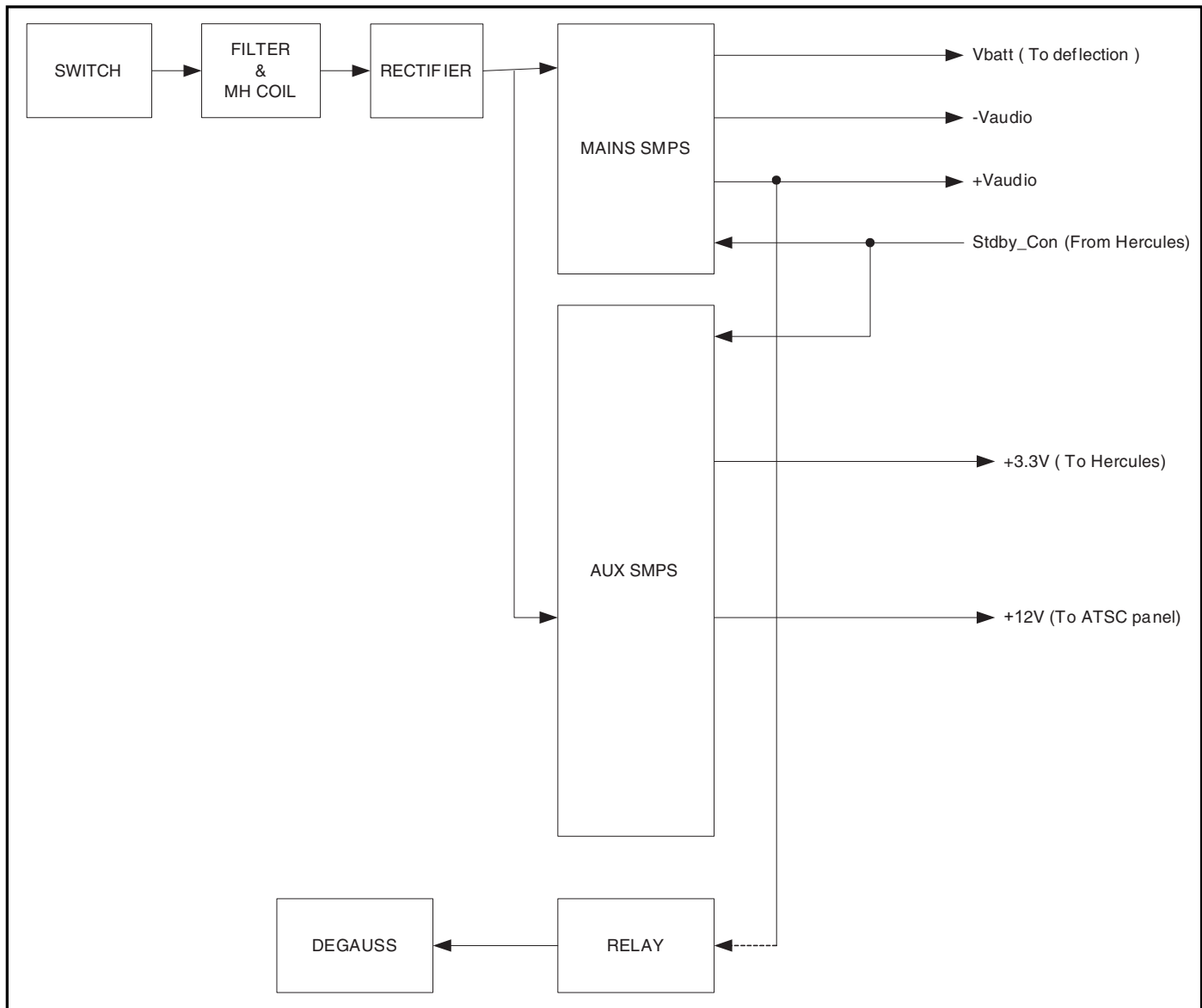
The module functionality includes digital cable and terrestrial reception and processing, digital terrestrial (8VSB ATSC) and digital cable (QAM & 8VSB ATSC) free to air reception and processing, and S/PDIF audio output possibility (coaxial). The ATSC module provides it's own OSD (On Screen Display) capsulated in the main video output and handles EPG (digital, based on PSIP information), CC (digital) and V-Chip (digital). The module can be controlled via RS-232C by a host controller. The ATSC module has one physical RF input for cable or terrestrial. The CAS-2 IC sends the serial Transport Stream to the MPEG-2 decoder after demodulation of the digital 8-VSB ATSC RF (Terrestrial or Cable) and 64-256 QAM (Cable in-the-clear). The MPEG2 Transport Stream is routed to the ZR39640 IC where it is parsed into video, audio, and data streams. After the video stream decoding, processing, and conversion, the video is coming out of the module on the main video output (480i, analogue YUV). The audio stream is decoded, processed, and DA converted, and is coming out of the module on the audio output (analogue L/R, standard or Dolby-ProLogic down-mixed – and S/PDIF).

Table 9-1 ATSC module connector pinning overview

Pin No	Signal Name	Name Explanation
Connector P1206		
1	Rx	RS-232 Rx
2	GND	GND
3	Tx	RS-232 Tx
4	RESET#	Module Reset Signal
Connector P1212		
1	Y	Video Y signal out to TV chassis
2	GND	GND
3	U	Video U signal Out to TV chassis
4	GND	GND
5	V	Video V signal Out to TV chassis
Connector P1219		
1	R_OUT	Audio Right signal out to TV chassis
2	GND	GND
3	L_OUT	Audio Left signal out to TV chassis
4	GND	GND
5	Reserved	Reserved
Connector P1582		
1	10V	Supply
2	10V	Supply
3	GND	GND
4	GND	GND
Connector P701		
1	Tx	3.3V TTL (RS232 Tx for Service port)
2	GND	GND
3	Rx	3.3V TTL (RS232 Rx for Service port)

9.3 Supply Architecture

9.3.1 Block Diagram



F_15760_041.eps
161105

Figure 9-3 Block diagram Power Supply

The L04.6 power management consists of two Switched Mode Power Supplies (SMPS).

The Main SMPS delivers Vbat and Vaudio. The Aux SMPS delivers 3.3V, 12V to derive Hercules and Tuner on the main chassis, and also to provide the 3.3V, 6V and 10V supply to the ATSC Module. The Aux SMPS also gives out the POWER_DOWN signal to the Hercules. This is an early warning signal on power failure used to mute the sound and EHT discharge.

The Hercules gives out STDBY_CON signal to the Main SMPS. This is to enable the Main SMPS in normal operation, and disable it during Stand-by. Figure above gives the block diagram of the complete chassis power supply.

STBY_CON

This signal is generated by the Hercules. It is logic "Low" (0V) under normal operation and in Semi Stand-by of the TV,

and High (3.3V) during Stand-by.

POWER_DOWN

This signal is generated by the Aux SMPS. It is logic "High" (3V3) under normal operation of the TV and goes "Low" (0V) when the AC Power input voltage of the supply goes below 70 V_{AC}.

B (Hercules Port)

This port is used to switch "on" the +12V of the ATSC panel. It is logic "High" (3.3V) under normal operation and in Semi Stand-by of the TV, and "Low" (0V) during Standby.

9.4 Power Modes

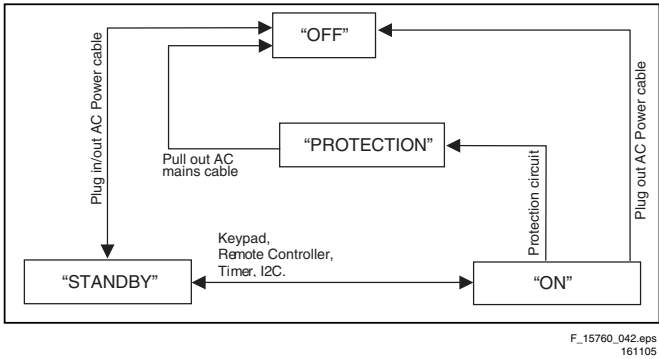


Figure 9-4 Power modes transition diagram

The chassis has four power supply modes for efficient power management and protection management. They are: “ON”, “OFF”, “STANDBY”, and “PROTECTION”. Transitions between any power modes are shown in figure above.

9.4.1 OFF Mode

The set is completely switched “off” from the AC Power. This is done with the AC. For NAFTA it means disconnecting the TV from the mains by pulling out the AC Power cable. When the mains is connected, this mode transits to “STANDBY”. The transition timing for a “cold” start from “OFF” state to “ON” is such that from the instance the Hercules gets a hard reset, in 12 s or less, the audio and video must be present.

9.4.2 ON Mode

This is the normal operating mode. All the power supply lines in the chassis are available. All the circuits in the set are active. From this mode, it is possible to transit to “STANDBY”, “PROTECTION”, or “OFF” mode.

9.4.3 STANDBY Mode

The total power consumption of the TV set in this mode shall be equal or less than 1 W (“GREEN” requirement). The Standby State will be indicated by the LED (LED “off”). In this state, only the Hercules uP and NVM are powered. Rest of the chassis sub-systems are disconnected. Control ports STDBY_CON and AUX_ON are defined to control this status. In this mode, the Hercules and peripherals are set to the lowest power consumption mode (SLEEP MODE) by software. From this mode it shall be possible to transit to “ON” or “OFF” mode.

9.4.4 PROTECTION Mode

The power profile for the PROTECTION mode is as low as required to allow “soft” diagnostics, error detection, and to indicate LED flashes to flag the type of fault. The horizontal deflection is “off” in this mode. From the protection mode the only possible transition is to “OFF” mode and “ON” mode. Special cases to disable

9.5 Abbreviation List

2CS	2 Carrier (or Channel) Stereo
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AFT	Automatic Fine Tuning
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific region
AR	Aspect Ratio: 4 by 3 or 16 by 9
ATS	Automatic Tuning System
AV	External Audio Video
AVL	Automatic Volume Leveler
BCL	Beam Current Limitation
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
CC	Closed Caption
CCC	Continuous Cathode Calibration
ComPair	Computer aided rePair
CRT	Cathode Ray Tube or picture tube
CSM	Customer Service Mode
CTI	Color Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
CVI	Component Video Input
DAC	Digital to Analogue Converter
DBX	Dynamic Bass Expander or noise reduction system in BTSC
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EHT	Extra High Tension
EHT-INFO	Extra High Tension information
EPG	Electronic Programming Guide
EU	Europe
EW	East West, related to horizontal deflection of the set
EXT	External (source), entering the set via SCART or Cinch
FBL	Fast Blanking: DC signal accompanying RGB signals
FILAMENT	Filament of CRT
FM	Field Memory or Frequency Modulation
H	Horizontal sync signal
HP	Headphone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
IF	Intermediate Frequency

IIC	Integrated IC bus	POR	Power-On Reset
ITV	Institutional TV	PTP	Picture Tube Panel (or CRT-panel)
LATAM	Latin American countries like Brazil, Argentina, etc.	RAM	Random Access Memory
LED	Light Emitting Diode	RC	Remote Control handset
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	RGB	Red, Green, and Blue video signals
LS	Large Screen or Loudspeaker	ROM	Read Only Memory
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz	SDAM	Service Default / Alignment Mode
NC	Not Connected	SAP	Second Audio Program
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.	SC	Sandcastle: pulse derived from sync signals
NTSC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	S/C	Short Circuit
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments	SCL	Serial Clock
OB	Option Bit	SDA	Serial Data
OC	Open Circuit	SECAM	SEquence Couleur Avec Memoire. Color system mainly used in France and East Europe. Color carriers = 4.406250 MHz and 4.250000 MHz
OP	Option Byte	SIF	Sound Intermediate Frequency
OSD	On Screen Display	SS	Small Screen
PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier = 4.433619 MHz) and South America (color carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)	STBY	Standby
PCB	Printed Circuit board	SVHS	Super Video Home System
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	SW	Software
		THD	Total Harmonic Distortion
		TXT	Teletext
		uP	Microprocessor
		UOC	Ultimate One Chip
		V	Vertical sync signal
		V_BAT	Main supply voltage for the deflection stage (mostly 141 V)
		V-chip	Violence Chip
		VCR	Video Cassette Recorder
		WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
		XTAL	Quartz crystal
		YC	Luminance (Y) and Chrominance (C) signal

9.6 IC Data Sheets

Not applicable

10. Spare Parts List

Set Level					
Various					
1014	3139 188 04331	Top Control Assy [E]	2213	3198 017 42240	220nF 16V Y5V 0603
1016	3139 188 06951	Side I/O Assy [D]	2214	3198 017 31040	100nF 20% 50V 0603
1060	3139 188 52721	Front Interface Assy [J]	2215	3198 017 42240	220nF 16V Y5V 0603
1099▲	9301 891 90631	CRT A68AJB82X11	2216	3198 017 42240	220nF 16V Y5V 0603
1099▲	9301 946 60527	CRT A68QCU770X73	2217	3198 025 31010	100μF 20% 25V
1099▲	9322 231 68682	CRT A80AEJ10X09B	2218	3198 025 34790	47μF 20% 25V
1099▲	9301 927 10539	CRT A80ERF042X14	2222	2238 586 15633	5.6nF 50V
1114	3139 188 65121	Top Control Assy [E]	2223	3198 017 31040	100nF 20% 50V 0603
1116	3139 188 06931	SideA/V Assy[D]SL3,PV02	2224	3198 025 31010	100μF 20% 25V
1116	3139 267 18941	SideA/V Assy[D]SL-5	2225	3198 017 42240	220nF 16V Y5V 0603
1128	3139 267 21311	ATSC Module [ATSC]	2226	3198 017 42240	220nF 16V Y5V 0603
1160	3139 188 52711	Front Interface Assy [J]	2229	3198 017 42240	220nF 16V Y5V 0603
1160	3139 267 18971	Front Interface Assy [J]	2230	3198 025 51090	10μF 20% 50V
8000	3139 131 06661	Cable Phono/400/Phono	2231	3198 017 31040	100nF 20% 50V 0603
8010	3104 311 03291	Cable 3p/1100/3p	2232	3198 017 31040	100nF 20% 50V 0603
8157	3139 110 38941	Cable 6p/340/6p	2233	3198 017 31040	100nF 20% 50V 0603
8204	3104 311 09011	Cable 7p/400/7p	2234	3198 025 31010	100μF 20% 25V
8206	3139 110 38701	Cable 4p/400/4p	2235	3198 017 36820	6.8nF 50V 0603
8207	3139 110 39091	Cable 7p/680/7p	2236	3198 017 31030	10nF 20% 50V 0603
8212	3139 131 07551	Cable 5p/400/5p	2236	3198 017 32220	2.2nF 20% 50V 0603
8219	3104 301 09971	Cable 5p/400/5p	2237	3198 017 31040	100nF 20% 50V 0603
8278	3139 131 01262	Cable 4p/1k+340/2p+2p	2238	3198 017 42240	220nF 16V Y5V 0603
8278	3139 131 02571	Cable 4p/1200	2239	3198 017 42240	220nF 16V Y5V 0603
8280	3139 131 06701	Cable 5p/680/5p	2240	2020 021 90137	1.5μF 20% 20V
8341	3139 131 05981	Cable 6p/400/6p	2241	3198 017 32230	22nF 20% 25V 0603
8401	3139 121 09041	Cable 5p/560/5p	2242	3198 017 31040	100nF 20% 50V 0603
8582	3139 131 04521	Cable 4p/480	2243	3198 017 31040	100nF 20% 50V 0603
			2244	3198 017 22250	2.2μF 10V 0805
			2245	3198 016 31020	1nF 25V 0603
			2246	3198 017 31040	100nF 20% 50V 0603
			2247	3198 017 31040	100nF 20% 50V 0603
			2248	3198 017 01020	1nF 10% 50V 0805
			2249	3198 017 31040	100nF 20% 50V 0603
			2250	3198 025 31010	100μF 20% 25V
			2251	2022 318 00212	150nF 50V
			2252	3198 017 31030	10nF 20% 50V 0603
			2253	3198 017 31030	10nF 20% 50V 0603
			2254	3198 017 31020	1nF 20% 50V 0603
			2254	3198 017 31030	10nF 20% 50V 0603
			2254	3198 017 32240	220nF 20% 10V 0603
			2255	3198 017 31030	10nF 20% 50V 0603
			2256	3198 017 31040	100nF 20% 50V 0603
			2257	3198 017 33320	3.3nF 50V 0603
			2259	3198 017 41050	1μF 10V 0603
			2260	3198 017 31040	100nF 20% 50V 0603
			2261	3198 017 31040	100nF 20% 50V 0603
			2262	3198 017 31030	10nF 20% 50V 0603
			2263	3198 017 31040	100nF 20% 50V 0603
			2264	3198 016 35610	560pF 10% 25V 0603
			2265	3198 025 31010	100μF 20% 25V
			2266	3198 017 22250	2.2μF 10V 0805
			2267	3198 017 22250	2.2μF 10V 0805
			2272	3198 017 31040	100nF 20% 50V 0603
			2273	3198 025 31010	100μF 20% 25V
			2274	3198 017 31040	100nF 20% 50V 0603
			2275	3198 025 51090	10μF 20% 50V
			2276	3198 023 21040	100nF 10% 25V 0805
			2279	3198 016 31010	100pF 10% 50V 0603
			2280	3198 017 41050	1μF 10V 0603
			2282	3198 017 31020	1nF 20% 50V 0603
			2288	3198 017 31020	1nF 20% 50V 0603
			2289	3198 017 31020	1nF 20% 50V 0603
			2290	2020 552 00132	2.2μF 10% 10V
			2330	2022 318 00198	100nF 10% 250V
			2331	3198 024 44730	47nF 50V 0603
			2332	2020 558 90621	10nF 630V
			2333	3198 017 31020	1nF 20% 50V 0603
			2334	2020 557 90733	47nF 10% 250V 1206
			2336	2020 557 90733	47nF 10% 250V 1206
			2361	2222 365 75224	220nF 10% 63V
			2362	3198 017 31020	1nF 20% 50V 0603
			2363	3198 025 72290	22μF 20% 100V
			2364	2222 365 55472	4.7nF 10% 400V
			2365	3198 017 34720	4.7pF 50V X7R 0603
			2367	3198 025 71090	10μF 20% 100V
			2368	3198 025 72290	22μF 20% 100V
			2376	3198 017 32230	22nF 20% 25V 0603
			2381	3198 025 31010	100μF 20% 25V
			2382	3198 017 31040	100nF 20% 50V 0603
			2383	2020 552 96723	1μF 20% 25V 0805
			2384	3198 016 32210	220pF 10% 50V 0603
			2385	3198 016 32210	220pF 10% 50V 0603
			2386	3198 017 31040	100nF 20% 50V 0603
			2387	3198 016 32290	22pF 10% 50V 0603
			2401	3198 028 54780	4.7μF 20%
			2402	3198 017 31530	15nF 20% 50V 0603
			2403	3198 017 33330	33nF 20% 16V 0603
			2406▲	3198 019 46810	680pF 500V
			2408	3198 016 31010	100pF 10% 50V 0603
			2409	3198 023 41040	100nF 10% 100V 0603
			2410	3198 017 21050	1μF 5% 16V 0805
			2410	3198 023 21040	100nF 10% 25V 0805
			2414	3198 017 41050	1μF 10V 0603
			2415	2022 031 00172	2.2μF 160V
			2420	3198 017 41050	1μF 10V 0603
			2425	3198 017 31030	10nF 20% 50V 0603
			2425	3198 017 33330	33nF 20% 16V 0603
			2428	3198 017 33330	33nF 20% 16V 0603
			2451	2222 365 75124	120nF 10% 63V
			2451	2222 365 75184	180nF 10% 63V
			2451	2222 365 85154	150nF 10% 100V
			2451	2222 365 85224	220nF 10% 100V
			2453	3198 017 21050	1μF 5% 16V 0805
			2454	3198 025 24710	470μF 16V
			2456	2020 557 90733	47nF 10% 250V 1206
			2457	2020 012 93282	4.7μF 20% 250V
			2459▲	3198 019 44710	470pF 500V
			2460	3198 025 24710	470μF 16V
			2461	3198 016 31020	1nF 25V 0603
			2462	3198 016 31020	1nF 25V 0603
			2463	3198 037 51010	100μF 20% 50V
			2464	3198 016 34710	470pF 10% 50V 0603
			2465	3198 025 71090	10μF 20% 100V
			2467	2222 365 55103	10nF 10% 400V
			2468	3198 016 32210	220pF 10% 50V 0603
			2469	3198 017 42240	220nF 16V Y5V 0603
			2470	2222 601 55649	100nF 10% 100V 1206
			2484	2020 009 00001	100μF 50V
			2486	2252 508 08255	27pF 500V
			2487	3198 017 01520	1.5nF 50V 0805
			2487	3198 017 02220	2.2nF 20% 50V 0805
			2489	3198 017 31030	10nF 20% 50V 0603
			2490	2020 557 90733	47nF 10% 250V 1206
			2503▲	3198 019 52220	2.2nF 1kV
			2504▲	3198 019 52220	2.2nF 1kV
			2511	3198 025 52290	22μF 20% 50V
			2512	3198 017 31040	100nF 20% 50V 0603
			2513	3198 017 34710	470pF 50V X7R 0603
			2515	3198 016 34710	470pF 10% 50V 0603
			2516	3198 017 31040	100nF 20% 50V 0603
			2517	3198 017 31020	1nF 20% 50V 0603
			2519	2020 557 90726	100pF 5% 100V 0603
			2530	2020 557 00005	330pF 100V
			2531	3198 016 34710	470pF 10% 50V 0603
			2532	2020 552 96823	10μF 16V
			2533	3198 017 34720	4.7pF 50V X7R 0603
			2534	2020 558 90261	68pF 1kV
			2535	3198 025 01020	1000μF 20% 6.3V
			2535	3198 037 01020	1000μ 6.3V
			2538	3198 017 34710	470pF 50V X7R 0603
			2539▲	3198 019 44710	470pF 500V
			2541	3198 025 34790	47μF 20% 25V
			2543▲	3198 019 42220	2.2nF 500V
			2544	3198 017 01020	1nF 10% 50V 0805
			2546▲	3198 019 64710	470pF 1kV 10%
			2549	3198 016 31010	100pF 10% 50V 0603
			2550	2020 557 00002	33pF 200V
			2551▲	3198 019 61020	1nF 10% 1kV
			2553	3198 016 31810	180pF 10% 50V 0603
			2561▲	3198 019 41020	1nF 500V
			2564	2238 580 15649	100nF 10% 50V
			2565▲	3198 019 41020	1nF 500V
			2571	3198 017 31530	15nF 20% 50V 0603
			2572	3198 017 31030	10nF 20% 50V 0603
			2573	2020 552 96683	220nF 10% 50V
			2601	3198 016 31020	1nF 25V 0603
			2611	3198 025 34790	47μF 20% 25V
			2615	2020 552 96305	4.7μF 20-80% 10V
			2617	3198 017 31040	100nF 20% 50V 0603
			2620	3198 017 31040	100nF 20% 50V 0603
			2621	3198 025 31010	100μF 20% 25V
			2623	3198 017 31040	100nF 20% 50V 0603
			2624	3198 025 31010	100μF 20% 25V
			2625	2020 552 00179	2μF 10% 25V
			2626	3198 016 33390	33pF 50V NP0 0603
			2627	3198 016 33390	33pF 50V NP0 0603
			2628	3198 016 33390	33pF 50V NP0 0603
			2629	3198 016 33390	33pF 50V NP0 0603
			2630	3198 017 31020	1nF 20% 50V 0603
			2691	3198 025 12210	220μF 20% 10V
			2986	3198 017 31040	100nF 20% 50V 0603
			2987	3198 017 31040	100nF 20% 50V 0603
			2988	3198 017 31040	100nF 20% 50V 0603
			2989	3198 017 41050	1μF 10V 0603
			2990	3198 016 31020	1nF 25V 0603
			2992	3198 017 41050	1μF 10V 0603
			2993	3198 016 31020	

2995	3198 017 32230	22nF 20% 25V 0603	3273	3198 021 31020	1kΩ 5% 0.062W 0603	3454	3198 011 04730	47kΩ 5% 1/6W
2996	3198 024 44730	47nF 50V 0603	3274	3198 011 01010	100Ω 5% 0.17W	3455▲	2306 207 03108	Fuse 1Ω 5% NFR25H
2997	3198 024 44730	47nF 50V 0603	3275	3198 011 01010	100Ω 5% 0.17W	3457▲	2306 207 03108	Fuse 1Ω 5% NFR25H
-WW-			3276	3198 011 01010	100Ω 5% 0.17W	3458▲	2306 207 03478	Fuse 4.7Ω 5% NFR25H
3003	3198 021 31030	10kΩ 5% 0.062W 0603	3277	3198 011 01010	100Ω 5% 0.17W	3460	3198 011 02220	2.2kΩ 5% 1/6W
3004	3198 021 36830	68kΩ 5% 0.062W 0603	3278	3198 011 01010	100Ω 5% 0.17W	3461	3198 011 02220	2.2kΩ 5% 1/6W
3005	3198 021 31010	100Ω 5% 0.062W 0603	3279	3198 021 34720	4.7kΩ 5% 0603	3462	3198 021 32220	2.2kΩ 5% 0603
3101	3198 011 06890	68Ω 5% 1/6W	3280	3198 021 34720	4.7kΩ 5% 0603	3462	3198 021 33920	3.9kΩ 5% 0.062W 0603
3103	3198 011 01510	150Ω 5% 1/6W	3281	3198 021 34720	4.7kΩ 5% 0603	3463	3198 021 31020	1kΩ 5% 0.062W 0603
3104	3198 021 32240	220kΩ 5% 0603	3282	3198 021 34720	4.7kΩ 5% 0603	3464	3198 021 52210	220Ω 5% 0805
3105	3198 011 01510	150Ω 5% 1/6W	3283	3198 021 34720	4.7kΩ 5% 0603	3466▲	2306 207 03108	Fuse 1Ω 5% NFR25H
3106	3198 021 32240	220kΩ 5% 0603	3284	3198 021 34720	4.7kΩ 5% 0603	3467	3198 011 01210	120Ω 5% 1/6W
3121	3198 021 37590	75Ω 5% 0603	3285	3198 021 31020	1kΩ 5% 0.062W 0603	3467	3198 011 01510	150Ω 5% 1/6W
3123	3198 011 02230	22kΩ 5% 1/6W	3287	3198 021 31010	100Ω 5% 0.062W 0603	3467	3198 011 02210	220Ω 5% 1/6W
3124	3198 021 34730	47kΩ 5% 0603	3289	3198 021 31010	100Ω 5% 0.062W 0603	3468	3198 011 01510	150Ω 5% 1/6W
3125	3198 011 02230	22kΩ 5% 1/6W	3290	3198 021 31010	100Ω 5% 0.062W 0603	3468	3198 011 02210	220Ω 5% 1/6W
3126	3198 021 34730	47kΩ 5% 0603	3291	3198 011 01020	1kΩ 5% 0.17W	3469	3198 021 31020	1kΩ 5% 0.062W 0603
3129	3198 021 37590	75Ω 5% 0603	3292	3198 021 34730	47kΩ 5% 0603	3470	3198 011 02290	22 5% 1/6W
3130	3198 021 37590	75Ω 5% 0603	3293	3198 021 33930	39kΩ 5% 0.062W 0605	3471	3198 039 15080	1.5Ω 1% 0.25W
3131	3198 011 02230	22kΩ 5% 1/6W	3294	3198 021 31010	100Ω 5% 0.062W 0603	3471	3198 039 22080	2.2Ω 1%
3132	3198 021 34730	47kΩ 5% 0603	3295	3198 021 38220	8.2kΩ 5% 0.062W 0603	3471	3198 039 24080	2.4Ω 1%
3133	3198 011 02230	22kΩ 5% 1/6W	3296	3198 021 35620	5.6kΩ 5% 0.062W 0603	3472	3198 039 22080	2.2Ω 1%
3134	3198 021 34730	47kΩ 5% 0603	3297	3198 021 32230	22kΩ 5% 0603	3472	3198 039 24080	2.4Ω 1%
3135	3198 021 37590	75Ω 5% 0603	3298	3198 021 31010	100Ω 5% 0.062W 0603	3472	3198 039 27080	2.7Ω 1%
3167	3198 011 07590	75Ω 5% 0.17W	3328	3198 021 31010	100Ω 5% 0.062W 0603	3472	3198 039 33080	3.3Ω 1%
3168	3198 021 37590	75Ω 5% 0603	3329	3198 021 31010	100Ω 5% 0.062W 0603	3473	2322 702 60394	390kΩ 5% 0.062W 0603
3169	3198 021 37590	75Ω 5% 0603	3330	3198 021 31010	100Ω 5% 0.062W 0603	3473	2322 702 60824	820kΩ 5% 0603
3201	3198 011 01020	1kΩ 5% 0.17W	3331	3198 011 01010	100Ω 5% 0.17W	3473	3198 021 36840	680kΩ 5% 0.062W 0603
3202	3198 021 33320	3.3kΩ 5% 0.062W 0603	3332	3198 013 01520	1.5kΩ 20% 0.5W	3474	3198 021 31530	15kΩ 5% 0603
3203	3198 021 31540	150kΩ 5% 0.062W 0603	3333	3198 011 01010	100Ω 5% 0.17W	3475	3198 021 31530	15kΩ 5% 0603
3204	3198 021 33320	3.3kΩ 5% 0.062W 0603	3334	3198 013 01520	1.5kΩ 20% 0.5W	3475	3198 021 38220	8.2kΩ 5% 0.062W 0603
3205	3198 021 31230	12kΩ 5% 0.062W 0603	3335	3198 011 01010	100Ω 5% 0.17W	3478	3198 021 36820	6.8kΩ 5% 0.062W 0603
3206	3198 021 35620	5.6kΩ 5% 0.062W 0603	3336	3198 013 01520	1.5kΩ 20% 0.5W	3481▲	2322 750 61009	Fuse 10Ω 5% 1206
3207	3198 021 31010	100Ω 5% 0.062W 0603	3351▲	2120 202 00031	Fuse 100Ω 5%	3481▲	2322 750 62708	Fuse 1206
3208	3198 021 32730	27kΩ 5% 0603	3351▲	2306 204 03101	Fuse 100Ω 5%	3481▲	2322 750 65608	Fuse 5.6Ω 5% 1206
3209	3198 021 31080	1Ω 5% 0603	3354	3198 013 01520	1.5kΩ 20% 0.5W	3482	3198 039 22030	22kΩ 1%
3210	3198 021 31080	1Ω 5% 0603	3356	3198 039 10090	10Ω 1%	3482	3198 039 24020	2.4kΩ 1%
3211	3198 021 32730	27kΩ 5% 0603	3357▲	2122 552 00004	1mA 18V 0603	3483	3198 039 56020	5.6kΩ 1%
3212	3198 021 31010	100Ω 5% 0.062W 0603	3361	3198 021 31520	1.5kΩ 5% 0.062W 0603	3483	3198 039 56030	56kΩ 1%
3214	3198 021 31010	100Ω 5% 0.062W 0603	3362▲	2306 204 03109	Fuse 10Ω 5% NFR25	3484▲	2306 204 03108	Fuse NFR25 1Ω
3215	3198 011 04720	4.7kΩ 5% 1/6W	3363	3198 021 35610	560Ω 5% 0.062W 0603	3484▲	2306 204 03228	Fuse 2.2Ω 5%
3216	3198 021 31090	10Ω 5% 0.062W 0603	3364	3198 011 01080	1Ω 5% 1/6W	3485▲	2306 204 03108	Fuse NFR25 1Ω
3218	3198 021 31010	100Ω 5% 0.062W 0603	3365	3198 021 36890	68Ω 5% 0.062W 0603	3485▲	2306 204 03228	Fuse 2.2Ω 5%
3219	3198 021 31030	10kΩ 5% 0.062W 0603	3366	3198 021 36830	68kΩ 5% 0.062W 0603	3486	3198 021 36820	6.8kΩ 5% 0.062W 0603
3220	3198 021 31510	150Ω 5% 0.062W 0603	3367	3198 011 06830	68kΩ 5% 1/6W	3489	3198 021 54790	47Ω 5% 0805
3221	3198 021 32710	270Ω 5% 0603	3368	3198 021 35610	560Ω 5% 0.062W 0603	3490	3198 021 32230	22kΩ 5% 0603
3222	3198 021 33310	330Ω 5% 0.062W 0603	3369	3198 021 31010	100Ω 5% 0.062W 0603	3491	3198 021 31040	100kΩ 5% 0.062W 0603
3224	2122 101 02086	560kΩ 5%	3370	2322 702 60278	2.7Ω 5%	3491	3198 021 36830	68kΩ 5% 0.062W 0603
3224	3198 011 06840	680kΩ 5% 1/6W	3371	3198 011 04710	470Ω 5% 1/6W	3491	3198 021 38230	82kΩ 5% 0.062W 0603
3225	3198 021 31010	100Ω 5% 0.062W 0603	3374	3198 021 31810	180Ω 5% 0.062W 0603	3493	3198 021 32220	2.2kΩ 5% 0603
3226	3198 021 31010	100Ω 5% 0.062W 0603	3375	2322 730 61184	180kΩ 5% 0805	3494	2322 702 60184	180kΩ 5% 0603
3227	3198 021 31010	100Ω 5% 0.062W 0603	3376	3198 021 36830	68kΩ 5% 0.062W 0603	3494	3198 021 31040	100kΩ 5% 0.062W 0603
3228	3198 021 31010	100Ω 5% 0.062W 0603	3381	3198 011 01090	10Ω 5% 1/6W	3494	3198 021 31540	150kΩ 5% 0.062W 0603
3229	3198 021 31520	1.5kΩ 5% 0.062W 0603	3383	3198 021 52220	2.2kΩ 5% 0805	3494	3198 021 36840	680kΩ 5% 0.062W 0603
3230	3198 011 01010	100Ω 5% 0.17W	3384	3198 021 31030	10kΩ 5% 0.062W 0603	3495	3198 021 53340	330kΩ 5% 0805
3231	3198 011 01010	100Ω 5% 0.17W	3385	3198 021 31520	1.5kΩ 5% 0.062W 0603	3497▲	2306 207 03108	Fuse 1Ω 5% NFR25H
3232	3198 021 31230	12kΩ 5% 0.062W 0603	3387	3198 021 31820	1.8kΩ 5% 0.062W 0603	3498	3198 021 34720	4.7kΩ 5% 0603
3233	3198 021 31010	100Ω 5% 0.062W 0603	3388	3198 021 31590	15Ω 5% 0.062W 0603	3499	3198 021 53340	330kΩ 5% 0805
3234	3198 011 01010	100Ω 5% 0.17W	3389	3198 021 31590	15Ω 5% 0.062W 0603	3499	3198 021 56840	680kΩ 5% 0805
3235	3198 021 31020	1kΩ 5% 0.062W 0603	3390	3198 021 31220	1.2kΩ 5% 0.062W 0603	3500▲	2322 242 13335	3.3MΩ 5%
3236	3198 021 31010	100Ω 5% 0.062W 0603	3401	3198 039 47030	47kΩ 1%	3501▲	2322 242 13335	3.3MΩ 5%
3237	3198 021 31020	1kΩ 5% 0.062W 0603	3403	3198 011 01020	1kΩ 5% 0.17W	3502	3198 013 02210	220Ω 20% 0.5W
3238	3198 021 34720	4.7kΩ 5% 0603	3404▲	2322 750 61008	1Ω 5% 1206 Fuse	3503	2422 549 43073	Surge Prot 301N-A21F
3239	3198 011 01220	1.2kΩ 5% 1/6W	3405	3198 021 36820	6.8kΩ 5% 0.062W 0603	3504▲	2322 242 13155	1.5MΩ 5%
3240	3198 021 32230	22kΩ 5% 0603	3406	3198 011 03910	390Ω 5% 1/6W	3511	3198 011 04780	4.7Ω 5% 1/6W
3241	3198 039 39030	39kΩ 1%	3407	3198 011 06890	68Ω 5% 1/6W	3512	3198 021 31220	1.2kΩ 5% 0.062W 0603
3242	3198 021 34730	47kΩ 5% 0603	3409	3198 021 31820	1.8kΩ 5% 0.062W 0603	3513▲	2120 202 00032	Fuse 2.2kΩ 5%
3244	3198 021 31010	100Ω 5% 0.062W 0603	3410	3198 039 15020	1.5kΩ 1%	3514▲	2120 202 00031	Fuse 100Ω 5%
3245	2322 702 60279	27Ω 5% 0.1W 0603	3411▲	2322 242 13684	680kΩ 5%	3515	3198 011 01020	1kΩ 5% 0.17W
3246	3198 011 04720	4.7kΩ 5% 1/6W	3412	2122 101 01386	1kΩ 5% CRB 0.25W	3517	2322 704 63004	300KΩ
3247	3198 021 33910	390Ω 5% 0.062W 0603	3412	3198 011 01020	1kΩ 5% 0.17W	3518	3198 021 33320	3.3kΩ 5% 0.062W 0603
3248	3198 021 31010	100Ω 5% 0.062W 0603	3415	3198 011 01010	100Ω 5% 0.17W	3519	3198 011 01530	15kΩ 5% 1/6W
3249	3198 011 01010	100Ω 5% 0.17W	3416	3198 021 34790	47Ω 5% 0603	3521	3198 011 03320	3.3kΩ 5% 1/6W
3250	3198 021 32220	2.2kΩ 5% 0603	3418	3198 011 01010	100Ω 5% 0.17W	3522	3198 021 35630	56kΩ 5% 0.062W 0603
3251	3198 021 31030	10kΩ 5% 0.062W 0603	3420	3198 021 51030	10kΩ 5% 0805	3524	3198 021 34730	47kΩ 5% 0603
3252	3198 011 01020	1kΩ 5% 0.17W	3425	3198 039 10040	100kΩ 1%	3530	3198 021 32210	220Ω 5% 0603
3253	3198 021 31010	100Ω 5% 0.062W 0603	3427	3198 021 52220	2.2kΩ 5% 0805	3531	3198 011 01040	100kΩ 5% 1/6W
3257	3198 021 31010	100Ω 5% 0.062W 0603	3428	3198 021 53320	3.3kΩ 5% 0805	3532▲	2306 207 03158	Fuse 1.5Ω 5% NFR25H
3258	3198 011 01010	100Ω 5% 0.17W	3430	2322 241 53124	120KΩ	3533	2322 704 65602	5.6kΩ 1%
3259	3198 021 31030	10kΩ 5% 0.062W 0603	3431	3198 039 10030	10kΩ 1%	3534	3198 011 01010	100Ω 5% 0.17W
3260	3198 011 01010	100Ω 5% 0.17W	3431	3198 039 82030	82kΩ 1%	3535	3198 021 31020	1kΩ 5% 0.062W 0603
3261	3198 021 34720	4.7kΩ 5% 0603	3440	3198 011 05610	560Ω 5% 1/6W	3536	3198 021 31020	1kΩ 5% 0.062W 0603
3262	3198 021 31010	100Ω 5% 0.062W 0603	3441	2322 241 53124	120KΩ	3537	3198 021 32220	2.2kΩ 5% 0603
3263	3198 021 31010	100Ω 5% 0.062W 0603						

3576	2322 704 64702	4.7kΩ 1%	9002	3198 036 90010	Wire 0.58mm	9460	3198 036 90010	Wire 0.58mm
3577	3198 011 01520	1.5kΩ 5% 1/6W	9112	3198 036 90010	Wire 0.58mm	9466	3198 036 90010	Wire 0.58mm
3578	3198 021 34710	470Ω 5% 0603	9113	3198 036 90010	Wire 0.58mm	9467	3198 036 90010	Wire 0.58mm
3579	3198 021 32220	2.2kΩ 5% 0603	9114	3198 036 90010	Wire 0.58mm	9469	3198 036 90010	Wire 0.58mm
3601	3198 021 34720	4.7kΩ 5% 0603	9116	3198 036 90010	Wire 0.58mm	9470	3198 036 90010	Wire 0.58mm
3604	3198 021 31010	100Ω 5% 0.062W 0603	9120	3198 036 90010	Wire 0.58mm	9473	3198 036 90010	Wire 0.58mm
3605	3198 021 31010	100Ω 5% 0.062W 0603	9121	3198 036 90010	Wire 0.58mm	9474	3198 036 90010	Wire 0.58mm
3606	3198 011 05630	56kΩ 5% 1/6W	9122	3198 036 90010	Wire 0.58mm	9475	3198 036 90010	Wire 0.58mm
3607	3198 021 31030	10kΩ 5% 0.062W 0603	9123	3198 036 90010	Wire 0.58mm	9476	3198 036 90010	Wire 0.58mm
3608	3198 021 32730	27kΩ 5% 0603	9124	3198 036 90010	Wire 0.58mm	9477	3198 036 90010	Wire 0.58mm
3609	3198 021 33310	330kΩ 5% 0.062W 0603	9125	3198 036 90010	Wire 0.58mm	9478	3198 036 90010	Wire 0.58mm
3614	3198 021 90030	Jumper 0603	9126	3198 036 90010	Wire 0.58mm	9479	3198 036 90010	Wire 0.58mm
3616	3198 011 01010	100Ω 5% 0.17W	9128	3198 036 90010	Wire 0.58mm	9480	3198 036 90010	Wire 0.58mm
3617	3198 011 01010	100Ω 5% 0.17W	9129	3198 036 90010	Wire 0.58mm	9481	3198 036 90010	Wire 0.58mm
3618	3198 011 01010	100Ω 5% 0.17W	9138	3198 036 90010	Wire 0.58mm	9482	3198 036 90010	Wire 0.58mm
3619	3198 021 36810	680Ω 5% 0.062W 0603	9202	3198 036 90010	Wire 0.58mm	9483	3198 036 90010	Wire 0.58mm
3620	3198 021 36810	680Ω 5% 0.062W 0603	9203	3198 036 90010	Wire 0.58mm	9484	3198 036 90010	Wire 0.58mm
3634	3198 021 31020	1kΩ 5% 0.062W 0603	9204	3198 036 90010	Wire 0.58mm	9485	3198 036 90010	Wire 0.58mm
3635	3198 021 34730	47kΩ 5% 0603	9205	3198 036 90010	Wire 0.58mm	9486	3198 036 90010	Wire 0.58mm
3637	3198 021 34790	47Ω 5% 0603	9206	3198 036 90010	Wire 0.58mm	9487	3198 036 90010	Wire 0.58mm
3681	2322 704 68201	82kΩ 1% 0603	9207	3198 036 90010	Wire 0.58mm	9488	3198 036 90010	Wire 0.58mm
3684	2322 704 61202	1.2kΩ 1%	9208	3198 036 90010	Wire 0.58mm	9489	3198 036 90010	Wire 0.58mm
3685	3198 021 31510	150Ω 5% 0.062W 0603	9209	3198 036 90010	Wire 0.58mm	9490	3198 036 90010	Wire 0.58mm
3686	3198 021 33910	390kΩ 5% 0.062W 0603	9210	3198 036 90010	Wire 0.58mm	9491	3198 036 90010	Wire 0.58mm
3687	2322 704 61802	1.8kΩ 1%	9211	3198 036 90010	Wire 0.58mm	9492	3198 036 90010	Wire 0.58mm
3690	3198 021 32210	220Ω 5% 0603	9212	3198 036 90010	Wire 0.58mm	9505	3198 036 90010	Wire 0.58mm
3691	3198 021 31220	1.2kΩ 5% 0.062W 0603	9213	3198 036 90010	Wire 0.58mm	9506	3198 036 90010	Wire 0.58mm
3693	3198 021 32210	220Ω 5% 0603	9214	3198 036 90010	Wire 0.58mm	9507	3198 036 90010	Wire 0.58mm
3694	3198 021 34720	4.7kΩ 5% 0603	9216	3198 036 90010	Wire 0.58mm	9508	3198 036 90010	Wire 0.58mm
3985	3198 021 33930	39kΩ 5% 0.062W 0605	9217	3198 036 90010	Wire 0.58mm	9509	3198 036 90010	Wire 0.58mm
3988	3198 021 31030	10kΩ 5% 0.062W 0603	9218	3198 036 90010	Wire 0.58mm	9510	3198 036 90010	Wire 0.58mm
3989	3198 021 31090	10kΩ 5% 0.062W 0603	9219	3198 036 90010	Wire 0.58mm	9514	3198 036 90010	Wire 0.58mm
3991	3198 021 33930	39kΩ 5% 0.062W 0605	9220	3198 036 90010	Wire 0.58mm	9536	3198 036 90010	Wire 0.58mm
3992	3198 021 31030	10kΩ 5% 0.062W 0603	9221	3198 036 90010	Wire 0.58mm	9537	3198 036 90010	Wire 0.58mm
3993	3198 021 31090	10kΩ 5% 0.062W 0603	9222	3198 036 90010	Wire 0.58mm	9570	3198 036 90010	Wire 0.58mm
3994	3198 021 36830	68kΩ 5% 0.062W 0603	9223	3198 036 90010	Wire 0.58mm	9573	3198 036 90010	Wire 0.58mm
3995	3198 021 34720	4.7kΩ 5% 0603	9224	3198 036 90010	Wire 0.58mm	9574	3198 036 90010	Wire 0.58mm
4000	3198 021 90030	Jumper 0603	9225	3198 036 90010	Wire 0.58mm	9575	3198 036 90010	Wire 0.58mm
4001	3198 021 90030	Jumper 0603	9226	3198 036 90010	Wire 0.58mm	9576	3198 036 90010	Wire 0.58mm
4002	3198 021 90030	Jumper 0603	9227	3198 036 90010	Wire 0.58mm	9577	3198 036 90010	Wire 0.58mm
4003	3198 021 90030	Jumper 0603	9228	3198 036 90010	Wire 0.58mm	9578	3198 036 90010	Wire 0.58mm
4006	3198 021 90030	Jumper 0603	9229	3198 036 90010	Wire 0.58mm	9579	3198 036 90010	Wire 0.58mm
4013	3198 021 90030	Jumper 0603	9230	3198 036 90010	Wire 0.58mm	9582	3198 036 90010	Wire 0.58mm
4015	3198 021 90030	Jumper 0603	9231	3198 036 90010	Wire 0.58mm	9583	3198 036 90010	Wire 0.58mm
4106	3198 021 90030	Jumper 0603	9232	3198 036 90010	Wire 0.58mm	9584	3198 036 90010	Wire 0.58mm
4107	3198 021 90030	Jumper 0603	9233	3198 036 90010	Wire 0.58mm	9585	3198 036 90010	Wire 0.58mm
4108	3198 021 90030	Jumper 0603	9234	3198 036 90010	Wire 0.58mm	9586	3198 036 90010	Wire 0.58mm
4116	3198 021 90030	Jumper 0603	9235	3198 036 90010	Wire 0.58mm	9587	3198 036 90010	Wire 0.58mm
4136	3198 021 90030	Jumper 0603	9236	3198 018 15690	56μH 5%	9589	3198 036 90010	Wire 0.58mm
4209	3198 021 90030	Jumper 0603	9237	3198 036 90010	Wire 0.58mm	9590	3198 036 90010	Wire 0.58mm
4212	3198 021 90030	Jumper 0603	9238	3198 036 90010	Wire 0.58mm	9591	3198 036 90010	Wire 0.58mm
4221	3198 021 90030	Jumper 0603	9239	3198 036 90010	Wire 0.58mm	9592	3198 036 90010	Wire 0.58mm
4222	3198 021 90030	Jumper 0603	9240	3198 036 90010	Wire 0.58mm	9603	3198 036 90010	Wire 0.58mm
4223	3198 021 90020	Jumper 0805	9241	3198 036 90010	Wire 0.58mm	9605	3198 036 90010	Wire 0.58mm
4226	3198 021 90030	Jumper 0603	9242	3198 036 90010	Wire 0.58mm	9631	3198 036 90010	Wire 0.58mm
4227	3198 021 90030	Jumper 0603	9244	3198 036 90010	Wire 0.58mm	9633	3198 036 90010	Wire 0.58mm
4240	3198 021 90030	Jumper 0603	9245	3198 036 90010	Wire 0.58mm	9637	3198 036 90010	Wire 0.58mm
4241	3198 021 90030	Jumper 0603	9246	3198 036 90010	Wire 0.58mm	9639	3198 036 90010	Wire 0.58mm
4337	3198 021 90030	Jumper 0603	9247	3198 036 90010	Wire 0.58mm	9642	3198 036 90010	Wire 0.58mm
4370	3198 021 90020	Jumper 0805	9248	3198 036 90010	Wire 0.58mm	9643	3198 036 90010	Wire 0.58mm
4371	3198 021 90020	Jumper 0805	9249	3198 036 90010	Wire 0.58mm	9653	3198 036 90010	Wire 0.58mm
4437	3198 021 90030	Jumper 0603	9250	3198 036 90010	Wire 0.58mm	9660	3198 036 90010	Wire 0.58mm
4470	3198 021 90030	Jumper 0603	9251	3198 036 90010	Wire 0.58mm	9661	3198 036 90010	Wire 0.58mm
4474	3198 021 90030	Jumper 0603	9252	3198 036 90010	Wire 0.58mm	9662	3198 036 90010	Wire 0.58mm
4492	3198 021 90030	Jumper 0603	9253	3198 036 90010	Wire 0.58mm	9663	3198 036 90010	Wire 0.58mm
4533	3198 021 90020	Jumper 0805	9254	3198 036 90010	Wire 0.58mm	9664	3198 036 90010	Wire 0.58mm
4534	3198 021 90030	Jumper 0603	9255	3198 036 90010	Wire 0.58mm	9665	3198 036 90010	Wire 0.58mm
4535	3198 021 90030	Jumper 0603	9258	3198 036 90010	Wire 0.58mm	9666	3198 036 90010	Wire 0.58mm
4537	3198 021 90030	Jumper 0603	9259	3198 036 90010	Wire 0.58mm	9683	3198 036 90010	Wire 0.58mm
4581	3198 021 90020	Jumper 0805	9263	3198 036 90010	Wire 0.58mm	9688	3198 036 90010	Wire 0.58mm
4604	3198 021 90030	Jumper 0603	9264	3198 036 90010	Wire 0.58mm	9689	3198 036 90010	Wire 0.58mm
4610	3198 021 90030	Jumper 0603	9268	3198 036 90010	Wire 0.58mm	9694	3198 036 90010	Wire 0.58mm
4612	3198 021 90020	Jumper 0805	9269	3198 036 90010	Wire 0.58mm	9695	3198 036 90010	Wire 0.58mm
4620	3198 021 90030	Jumper 0603	9271	3198 036 90010	Wire 0.58mm	9696	3198 036 90010	Wire 0.58mm
4631	3198 021 90030	Jumper 0603	9272	3198 036 90010	Wire 0.58mm	9910	3198 036 90010	Wire 0.58mm
4635	3198 021 90030	Jumper 0603	9273	3198 036 90010	Wire 0.58mm	9911	3198 036 90010	Wire 0.58mm
4637	3198 021 90030	Jumper 0603	9274	3198 011 01010	100Ω 5% 0.17W	9913	3198 036 90010	Wire 0.58mm
4642	3198 021 90030	Jumper 0603	9275	3198 036 90010	Wire 0.58mm	9914	3198 036 90010	Wire 0.58mm
4644	3198 021 90020	Jumper 0805	9276	3198 036 90010	Wire 0.58mm	9915	3198 036 90010	Wire 0.58mm
4645	3198 021 90030	Jumper 0603	9277	3198 036 90010	Wire 0.58mm	9920	3198 036 90010	Wire 0.58mm
4646	3198 021 90030	Jumper 0603	9278	3198 036 90010	Wire 0.58mm	9921	3198 036 90010	Wire 0.58mm
4648	3198 021 90030	Jumper 0603	9279	3198 036 90010	Wire 0.58mm	9924	3198 036 90010	Wire 0.58mm
4649	3198 021 90030	Jumper 0603	9280	3198 036 90010	Wire 0.58mm	9926	3198 036 90010	Wire 0.58mm
4691	3198 021 90030	Jumper 0603	9290	3198 036 90010	Wire 0.58mm	9927	3198 036 90010	Wire 0.58mm
4692	3198 021 90030	Jumper 0603	9294	3198 036 90010	Wire 0.58mm	9935	3198 036 90010	Wire 0.58mm
4694	3198 021 90030	Jumper 0603	9296	3198 036 90010	Wire 0.58mm	9936	3198 036 90010	Wire 0.58mm
4696	3198 021 90030	Jumper 0603	9297	3198 036 90010	Wire 0.58mm	9937	3198 036 90010	Wire 0.58mm
4910	3198 021 90030	Jumper 0603	9298	3198 036 90010	Wire 0.58mm	9939	3198 036 90010	Wire 0.58mm
4914	3198 021 90020	Jumper 0805	9299	3198 036 90010	Wire 0.58mm	9942	3198 036 90010	Wire 0.58mm
4915	3198 021 90020	Jumper 0805	9373	3198 036 90010	Wire 0.58mm	9943	3198 036 90010	Wire 0.58mm
4916	3198 021 90020	Jumper 0805	9390	3198 036 90010	Wire 0.58mm	9944	3198 036 90010	Wire 0.58mm
4917	3198 021 90020	Jumper 0805	9401	3198 036 90010	Wire 0.58mm	9945	3198 036 90010	Wire 0.58mm
4921	3198 021 90020	Jumper 0805	9407	3198 036 90010	Wire 0.58mm			
4984	3198 021 90030	Jumper 0603	9410	3198 036 90010	Wire 0.58mm			

5001	3198 018 90030	120Ω 100MHz 0603
5002	3198 018 35670	0.56μH 10% 0805
5201	3198 018 90010	Bead 50Ω at 100MHz
5202	3198 018 90030	120Ω 100MHz 0603
5203	3198 018 90030	120Ω 100MHz 0603
5205	3198 018 90030	120Ω 100MHz 0603
5206	3198 018 90030	120Ω 100MHz 0603
5207	3198 018 90030	120Ω 100MHz 0603
5208	3198 018 90010	Bead 50Ω at 100MHz
5209	3198 018 90030	120Ω 100MHz 0603
5210	3198 018 90030	120Ω 100MHz 0603
5211	3198 018 90030	120Ω 100MHz 0603
5212	3198 018 90030	120Ω 100MHz 0603
5213	3198 018 90030	120Ω 100MHz 0603
5214	3198 018 90030	120Ω 100MHz 0603
5215	3198 018 90030	120Ω 100MHz 0603
5216	3198 018 90010	Bead 50Ω at 100MHz
5295	3198 018 90010	Bead 50Ω at 100MHz
5330	3198 018 90010	Bead 50Ω at 100MHz
5331	3198 018 90010	Bead 50Ω at 100MHz
5351	2422 535 97323	3.9μH 10%
5351	2422 535 97329	12μH 10%
5351	2422 535 97333	22μH 10%
5352	2422 535 94257	0.22 μF
5352	2422 535 94641	15μH 10%
5356	2422 535 97333	22μH 10%
5361	3198 018 90010	Bead 50Ω at 100MHz
5408	3128 138 37021	Choke Coil -CU15
5450▲	2422 531 02574	JF0501-21836
5451	2422 535 97324	4.7μH 10%
5451	2422 535 97326	6.8μH 10%
5451	2422 535 97334	27μH 10%
5451	2422 535 97335	33μH 10%
5500▲	2422 549 43567	Filter 10mH 2A DMF2810
5501▲	2422 549 43432	Filter 5mH 2A
5511	3198 018 90010	Bead 50Ω at 100MHz
5512▲	2422 531 00108	SS40511-00
5531▲	2422 531 00109	SS22508-01
5532	3198 018 90010	Bead 50Ω at 100MHz
5533	3198 018 31080	1μH 10% 0805
5551	3198 018 90010	Bead 50Ω at 100MHz
5552	2422 535 95366	27μH 5%
5561	3198 018 90010	Bead 50Ω at 100MHz
5562	3198 018 90010	Bead 50Ω at 100MHz



6001	3198 010 23390	BZX79C33
6006	3198 010 58280	BZX79-B8V2
6203	3198 010 10630	BAS316
6204	3198 010 10710	SS14
6205	3198 020 52790	BZX384C27
6207	3198 010 10630	BAS316
6209	3198 010 10660	BAT54
6210	3198 020 55680	BZX384-C5V6
6211	3198 020 55680	BZX384-C5V6
6331	3198 010 10070	BAV21
6332	3198 010 10070	BAV21
6333	3198 010 10070	BAV21
6361	3198 010 10620	BAV99
6376	3198 010 10620	BAV99
6383	9337 516 60673	RGP10D-E3
6401	9322 103 10673	BY268
6403	9322 126 72673	BYV27-200
6404	9322 221 54687	DMV1500SDFD
6406	9334 939 60673	RGP10G
6407	9322 197 45703	BAV21WS
6408	9322 197 45703	BAV21WS
6410	9322 224 43683	BY448
6441	9322 150 20685	BZX384-C68
6442	9322 150 20685	BZX384-C68
6443	3198 020 51090	BZX384C10
6450	3198 010 10630	BAS316
6451	3198 020 54780	BZX384-C4V7
6452	9322 126 72673	BYV27-200
6453	9334 939 60673	RGP10G
6454	9334 939 60673	RGP10G
6455	9334 939 60673	RGP10G
6456	9322 199 41687	STPS8H100FP
6457	3198 010 10630	BAS316
6458	3198 010 10630	BAS316
6459	9334 939 60673	RGP10G
6480	3198 010 56880	BZX79-B6V8
6481	3198 010 10010	1N4148
6482	3198 020 56880	BZX384-C6V8
6483	9322 197 45703	BAV21WS
6484	9322 197 45703	BAV21WS
6486	3198 010 10070	BAV21
6488	3198 010 10630	BAS316
6489	3198 020 53390	BZX384C33

6500	9322 204 55682	GBU4J-B12
6511	9337 516 60673	RGP10D-E3
6512	3198 010 10660	BAT54
6514	3198 010 10630	BAS316
6531	3198 020 51590	BZX384C15
6532	9322 197 45703	BAV21WS
6533	9322 171 80685	BZX384-B6V8
6534	9322 199 75685	BZX384-B3V9
6535	9322 198 24673	SB160
6536	3198 010 10690	SB240
6537	9322 175 70667	STPS10L60D
6540	9335 638 50673	RGP15J
6541	3198 020 51290	BZX384-C12
6551	9322 198 41687	STTH8L06D
6562	3198 010 10700	SB360
6563	3198 010 10700	SB360
6564	3198 010 10630	BAS316
6565	9340 548 43115	PDZ2.7B
6566	3198 010 10630	BAS316
6571	9331 849 10215	BAV70
6572	9340 548 54115	PDZ6.2B
6573	9331 177 80133	BZX79C9V1
6575	9322 005 16683	1N5392-E3
6602	3198 010 10620	BAV99
6691▲	9322 185 69682	LED 10234WHCR
6692	9322 206 78667	TSOP34836UH1B
6694	3198 020 55180	BZX384-C5V1



Software (see Product Survey)

0801	3139 127 06021
------	----------------



For SW see item 0801

7200	9322 054 28685	IMX1
7201	3198 020 43430	BC327-25
7203	3198 020 43430	BC327-25
7204	3198 010 42030	BC847B
7205	3198 010 42030	BC847B
7207	3198 010 42030	BC847B
7208	3198 010 42030	BC847B
7209	9340 547 13215	BSH103
7210	9340 547 13215	BSH103
7330	9352 636 44112	TDA6107AJF/N1B
7331	3198 010 42030	BC847B
7332	3198 010 42150	BC857B
7361	3198 010 42030	BC847B
7362	3198 010 42150	BC857B
7363	9322 195 05687	KTB631KY
7364	9322 195 14687	KTD600KY
7366	3198 010 42150	BC857B
7376	3198 010 42150	BC857B
7381	9331 796 00126	BC337-40
7382	9331 796 00126	BC337-40
7402	3198 010 42030	BC847B
7403	3198 010 42030	BC847B
7404	9340 547 13215	BSH103
7405	9340 582 66127	ON5266
7406	9322 224 86676	2SC5174
7408	3198 010 42030	BC847B
7410	3198 010 42150	BC857B
7411	3198 010 42150	BC857B
7451	9322 195 14687	KTD600KY
7452	9322 197 37676	KTC3228Y
7453	9322 195 05687	KTB631KY
7454	3198 010 42030	BC847B
7455	3198 010 42150	BC857B
7456	3198 010 42150	BC857B
7481	3198 010 42150	BC857B
7482	3198 010 44010	PDTA114ET
7483	3198 010 42150	BC857B
7484	3198 010 42030	BC847B
7511	9352 720 43518	TEA1506T/N1
7512	9322 187 16687	FQPF9N50
7513▲	9322 140 14667	TCET1103(G)
7514	3198 010 42030	BC847B
7531	9352 749 49112	TEA1623PH/N1
7535	9322 190 77685	SI2307DS
7536	9340 547 00215	PDTC143ZT
7541	3198 010 42150	BC857B
7561	9340 547 00215	PDTC143ZT
7571	3198 020 40030	BC547B
7573	3198 010 44110	DTC114ET
7601	9322 147 25682	M24C16-WBN6
7603	9322 134 92676	L78L33ACZ
7604	3198 010 42030	BC847B
7605	3198 020 43430	BC327-25
7606	3198 010 42030	BC847B
7990	9350 404 40112	TDA2616Q/N1
7991	3198 010 42030	BC847B
7992	3198 010 42030	BC847B

Side A/V Panel

Various

1232	2422 026 05701	Sock. Headphone 3.5mm
1250	2422 026 05742	Cinch 3p f YeWhRd
1252	2422 025 11244	Connector 7p m
1254	2422 025 12481	Connector 5p m
1278	2422 025 15847	Connector 4p m Bk



2171	3198 019 13310	330pF 50V
2172	3198 019 13310	330pF 50V
2173	3198 019 13310	330pF 50V
2174	3198 019 13310	330pF 50V
2175	3198 029 52280	2.2μF 20% 50V
2176	3198 017 31040	100nF 20% 50V 0603
2178	3198 017 34710	470pF 50V X7R 0603
2180	3198 029 52280	2.2μF 20% 50V



3150	3198 011 04730	47kΩ 5% 1/6W
3151	3198 011 02230	22kΩ 5% 1/6W
3152	3198 011 04730	47kΩ 5% 1/6W
3153	3198 011 02230	22kΩ 5% 1/6W
3154	3198 011 07590	75Ω 5% 0.17W
3156	3198 011 08210	820Ω 5% 1/6W
3157	3198 011 08210	820Ω 5% 1/6W
3160	3198 011 01010	100Ω 5% 0.17W
9181	3198 036 90010	Wire 0.58mm

Top Control Panel [E]

Various

1010	2422 025 16601	Connector 3p m
1011	2422 128 02742	Switch tact SKQNAB
1012	2422 128 02742	Switch tact SKQNAB
1013	2422 128 02742	Switch tact SKQNAB
1014	2422 128 02742	Switch tact SKQNAB



3011	3198 021 31510	150Ω 5% 0.062W 0603
3012	3198 021 33910	390Ω 5% 0.062W 0603
3013	2322 704 61802	1.8kΩ 1%
3014	3198 021 90030	Jumper 0603
3015	2322 704 68201	820Ω 1% 0603
3016	3198 021 90030	Jumper 0603

Front Interface Panel [J]

Various

1606	2422 128 02742	Switch tact SKQNAB
1693	2422 025 10738	Connector 6p m



2691	3198 025 32210	220μF 20% 25V
2698	3198 014 01040	100nF 10% 50V



3691	3198 011 01220	1.2kΩ 5% 1/6W
3693	3198 011 02210	220Ω 5% 1/6W
3694	3198 011 04720	4.7kΩ 5% 1/6W
9685	3198 036 90010	Wire 0.58mm



6691▲	9322 185 69682	LED 10234WHCR
6692	9322 206 78667	TSOP34836UH1B

Mains Switch Panel [M]

Various

1002	2422 128 02742	Switch tact SKQNAB
1003	2422 128 02742	Switch tact SKQNAB
1004	2422 128 02742	Switch tact SKQNAB
1005	2422 128 02742	Switch tact SKQNAB

1006	2422 128 02742	Switch tact SKQNAB
— —		
2001	3198 025 12210	220µF 20% 10V
—W—		
3002	3198 021 31220	1.2kΩ 5% 0.062W 0603
3006	3198 021 32210	220Ω 5% 0603
3007	3198 036 90010	Wire 0.58mm
3010	3198 011 04720	4.7kΩ 5% 1/6W
3014	3198 011 01510	150Ω 5% 1/6W
3016	3198 011 03910	390Ω 5% 1/6W
3018	3198 011 01820	1.8kΩ 5% 1/6W
3019	3198 011 08210	820Ω 5% 1/6W
4001	3198 021 90030	Jumper 0603
4003	3198 021 90030	Jumper 0603
4004	3198 021 90030	Jumper 0603
9011	3198 036 90010	Wire 0.58mm
9013	3198 036 90010	Wire 0.58mm
9015	3198 036 90010	Wire 0.58mm
9017	3198 036 90010	Wire 0.58mm
9019	3198 036 90010	Wire 0.58mm
9020	3198 036 90010	Wire 0.58mm
9040	3198 036 90010	Wire 0.58mm
9041	3198 036 90010	Wire 0.58mm
9044	3198 036 90010	Wire 0.58mm
9045	3198 036 90010	Wire 0.58mm
9047	3198 036 90010	Wire 0.58mm
→ ←		
6001	9322 185 69682	LTL-10234WHCR
6004	9322 206 78667	TSOP34836UH1B

11. Revision List

Manual xxxx xxx xxxx.0

- First release.